

IHRG APPENDICES

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A NEW BASE START-UP PROCEDURES

All proposed rappel activities must be fully analyzed and supported by agency-approved planning analysis systems. After analyzing and justifying the feasibility of a program, the local District/Area Office shall request approval from the appropriate State/Regional Office. The state/regional office shall then coordinate with the local unit on scheduling appropriate training in accordance with IHRG. This process must be documented by an approval letter to the local unit listing any conditions and/or restrictions for the new program. The Bureau/Agency National Office should be notified of any new rappel programs being initiated.

A.1 Equipment and Supplies

1. Tower design, minimum platform heights, and equipment must comply with the requirements outlined in the IHRG. Designs currently in use may be found at MTDC. It is important to involve local engineering personnel when constructing the rappel platform.
2. Equipment costs could be rather expensive. Managers need to realize dollar amount will vary. Budget should allow for adequate equipment. Equipment costs and suppliers may be located on the wildland fire helicopter rappel website.

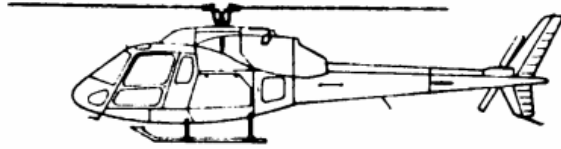
A.2 Training

1. Depending on the alternatives recommended by your Area, State, or Regional Office, for training new spotters and rappellers, you may need to budget additional dollars to have spotters attend training at an operational rappel base or to pay for travel and per diem to bring qualified instructors to the base to present the training. A qualified spotter shall provide all rappel and spotter training.

<p>NOTE: An experienced spotter should be assigned to the base for the first complete season. First-time spotters should not be trained simultaneously with first-time rappellers.</p>

2. A check spotter must be utilized to certify new spotters assuring demonstrated ability to rig helicopter, conduct rappels and cargo let down to the satisfaction of the check spotter. The trainee must meet the training requirements of the IHRG for a spotter.

B MODEL SPECIFIC RAPPEL/CARGO PROCEDURES



B.1 EUROCOPTER AS-350 SERIES (A-Star) RAPPEL PROCEDURES

B.1.1 PRE-FLIGHT PROCEDURES

B.1.1.1 Aircraft Configuration

Configure helicopter to meet specific needs of the particular mission.

1. Remove or secure all doors.
2. Remove co-pilot seat.
3. Install necessary sill plates.
4. Secure all loose items.

B.1.1.2 Seating Configuration

Specific seating arrangement for each aircraft must be approved in the aircraft flight manual or Supplemental Type Certificate (STC).

B.1.1.3 Loading Cargo

1. Internal cargo operations: Spotter oversees loading, rigging, and securing of cargo and letdown equipment.
2. External cargo operations: Cargo container is set up and loaded at front of helicopter on pilot's side. Spotter oversees all appropriate hook checks, spotter attaches single hard loop end of breakaway strap to the top end of the approved swivel hardware (see flight manual), and then connects swivel system and cargo to helicopter cargo hook.

B.1.1.4 Anchor

Internal Floor Anchor STC #SR00125LA-D

External Overhead Anchor STC #SR00123LA-D

1. Spotter visually inspects rappel anchor (see chapter 3, Rappel Anchor inspection.)

B.1.1.5 Rigging Anchor

Internal floor anchor:

1. Install steel-lite carabiners on the aft attachment points.
2. Set snub strap on floor by the anchor.

External overhead anchor:

1. For rope attachment, install steel-lite carabiners to the inner attachment point, gate facing forward, barrel lock down.
2. For snub strap, install steel-lite carabiners to the aft attachment point, gate facing forward, barrel lock down. Attach snub strap soft loop to carabiner.

B.1.1.6 Boarding Sequence

1. Rappellers complete buddy check, organize into proper rappel order and prepare to board the aircraft.
2. Ropes, with genies rigged, are connected to the steel-lite carabiner. The snub strap is connected between first and second swedges of rope. (For Internal floor anchor, protective hose must be over the sill plate or in the bottom of the rope bag when using External Overhead Anchor.
3. Rappeller(s) will “hook-up”, adjust length of rope to descent device to ensure proper position on the skid, then “lock-off”.

<p><u>NOTE:</u> If pilot operates aircraft from the left side, the terms “right side” and “left side” in steps 4-7 will be reversed.</p>

4. Spotter initiates right side rappeller equipment check.
 - a. Inspect anchor and accessories
 - b. Inspect Rigging
 - c. Inspect Rope and Genie
 - d. Inspect Rappeller
 - e. Inspect Sill Plate
5. If all is correct and ready, a thumbs up is exchanged by spotter and rappeller. Right side rappeller then boards aircraft, buckles seatbelt ensuring that both lap and shoulder belts are routed under the Forgecraft hook.
6. Spotter then moves to left side rappeller and initiates rappeller equipment check.
7. If all is correct and ready, a thumbs up is exchanged by spotter and rappeller. Left side rappeller then boards aircraft moving to the left inside seat, rappeller then buckles seatbelt ensuring that both lap and shoulder belts are routed under the Forgecraft hook. Spotter will then hand left side rappeller rope bag (this will eliminate any potential for rope over.)
8. Spotter completes pre-flight inspections, and external cargo checks (if utilized).
9. Prior to boarding, spotter receives an equipment check from the rappellers.
10. If all is correct and ready, a thumbs up is exchanged by spotter and rappeller.
11. Spotter enters a/c, connects tether and avionics, takes seat, fastens seatbelt, checks rappellers seatbelt, ropes and cargo. Rappellers check spotter’s seatbelt, tether and avionics, then exchange one last thumbs up with the spotter.

B.1.1.7 Preparing for Flight

1. **Spotter states to pilot, “OK to depart,”** and informs pilot if there is an external load attached to the cargo hook.
2. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.)

B.1.2 IN-FLIGHT PROCEDURES

CRITICAL:

- ◆ A HOGE Power check is accomplished prior to entering rappel hover at an altitude comparable to the site or greater. A positive rate of climb must be established without exceeding aircraft limitations.
- ◆ Prior to each rappel sequence, all communications, between the spotter and pilot will be in the form of “Challenge and Response” i.e. spotter states, “Sending rappeller.” Pilot replies, “Power good.”
- ◆ Pilot and spotter will assess the situation prior to each rappel sequence, i.e. available power, platform stability, and assessment of rappel site.

B.1.2.1 Pre-Rappel Sequence

1. Pilot(s) flies a reconnaissance of the area to look for hazards and works with spotter to select an appropriate rappel site and alternate emergency site.
2. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.) prior to commencing the rappel operation. Spotter communicates with flight following authority & pilot regarding number of rappellers to be deployed.
3. Adjust radios as needed.
4. **Pilot indicates, “One minute out.”**

B.1.2.2 Rappel Sequence

1. Spotter removes seatbelt and moves into position.
2. Spotter activates hot mike. From this point on all spotter actions will be verbalized to pilots. “Challenge and Response”

NOTE: For internal cargo operations: Once the off-site power check is complete, the spotter may have rappellers remove and secure seatbelts prior to entering the rappel hover.

3. Spotter and pilot will communicate adequate rotor clearance, power assessments, and rappel spot status throughout the rappel sequence. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground).
4. **Pilot states to spotter, “Hover established – and Power is good.”**

NOTE: For external cargo operations: Rappellers remain in seatbelts. Refer to external cargo deployment procedures.

5. **Spotter states to pilot, “Removing seatbelts,”** then gives signal to rappeller(s).
6. Right side rappeller removes and secures seatbelts. Left side rappeller will hand rope bag to the spotter, remove and secure seatbelt, then slide to the outside left seat where the rope bag will then be returned to the rappeller by the spotter (this will eliminate any potential of rope over.)
7. **Spotter states to pilot, “Dropping ropes,”** then gives signal to rappeller(s).

8. Rappeller(s) drop ropes.
9. **Spotter checks both ropes then states to pilot, “Ropes are down, spot good.”**
10. **Spotter states to pilot “Rappellers to the skids,”** then gives signal to rappeller(s).
11. Rappeller(s) move to the skid, get set, clear rope, focus on the spotter.
12. Spotter rechecks anchor rigging.

EMERGENCY PROCEDURE:

If at any time prior to the rappellers descent, the pilot (or spotter) indicates a problem, they shall reassess the situation and take appropriate action. This may include the spotter delay moving the rappellers out of their seatbelts or aborting the mission. If ropes are out and rappellers are out of their seats, spotter may signal rappellers back into the aircraft and cut ropes.

When spotter signals rappellers to re-enter aircraft the following procedures will occur; rappeller(s) return to seat and secure seatbelt. Spotter removes genies and disconnects ropes or cuts the rope(s) as necessary, closes doors (when applicable), returns to seat, secures seat belt. Spotter states to pilot, “Clear to fly.”

13. **Spotter states to pilot, “Sending rappeller(s),”** then gives signal to rappeller(s).
14. Rappeller(s) unlock, rotate over skid, and descend to the ground.
15. **Spotter states to pilot, “Rappeller away, half way, on the ground.”**
16. After reaching the ground, rappeller(s) disconnect from rope(s) and move to a safe area.

EMERGENCY PROCEDURE: Rappeller on the Rope

If pilot(s) give a negative response to the spotter during any portion of the rappel descent, both will reassess the situation and take appropriate action. In the event of an emergency, it is important that the pilot and spotter understand EXACTLY what action is required so that no miscommunication occurs.

17. Once the rappellers move to a safe area, spotter disconnects snub strap from rope(s), disconnects the rope from the anchor, confirms genie(s) are on the ground by directing pilot to lower aircraft if necessary, and throws rope(s).
18. **Spotter states to pilot, “Unhooking ropes, ropes away, returning to seat, seatbelt on, clear to fly.”** Spotter and pilot may proceed with internal cargo prior to leaving hover. See Internal Cargo Deployment Procedures below.
19. Radio returned to normal operational mode and flight following authority is informed that rappel operation has been completed. The helicopter shall remain in the area until rappellers have positive communication with dispatch, division, etc.

B.2 AS-350 SERIES CARGO DEPLOYMENT PROCEDURES

CRITICAL:

- ◆ Due to lateral C.G. limitations, cargo must be deployed from the side opposite the pilot.
- ◆ A swivel will be required with all external loads. The swivel attachment ring inside diameter must meet helicopter hook specifications.
- ◆ A HOGE Power check must be accomplished prior to entering cargo hover at an altitude comparable to the site or greater. A positive rate of climb must be established without exceeding aircraft limitations. Prior to each cargo sequence, all communications, between the spotter and pilot will be in the form of “Challenge and Response” i.e. spotter states, “Sending cargo.” Pilot replies, “Power good.”
- ◆ Pilot and spotter will assess the situation prior to each cargo sequence, i.e. available power, platform stability, and assessment of cargo site.

B.2.1 PRE-FLIGHT DUTIES

1. Prior to departure, the pilot(s) and involved personnel shall receive a briefing on mission objectives, communications, known hazards, and emergency procedures.
2. Load calculations and manifests complete and posted.
3. Spotter completes necessary pre-flight inspections.
4. Spotter puts on harness, ensures safety knife is attached to harness. A secondary knife may be accessible in the aircraft or on the spotter.
5. Prior to flight, the spotter must receive a spotter equipment check. When ground personnel are unavailable, the spotter may have the pilot perform this check. Positive communication between the spotter and pilot must occur to ensure Spotter has attached their tether to an approved hard point.

B.2.1.1 Aircraft Configuration

1. Remove or secure rear doors.
2. Install necessary sill plates
3. Remove co-pilot seat.
4. Secure all loose items.

B.2.1.2 Anchor

Internal Floor Anchor STC #SR00125LA-D

External Overhead Anchor STC #SR00123LA-D

1. Spotter visually inspects rappel anchor (see chapter 3, Rappel Anchor inspection.)

B.2.2 INTERNAL CARGO PROCEDURES

B.2.2.1 Rigging and Loading Cargo

1. Spotter oversees loading and securing of cargo and letdown equipment.
2. Spotter boards aircraft, connects tether, and fastens seatbelt.

B.2.2.2 Pre-Cargo Deployment

1. Pilot(s) flies a reconnaissance of the area to look for hazards and works with spotter to select an appropriate rappel site and alternate emergency site.
2. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.) prior to commencing the cargo sequence.
3. Spotter advises the ground personnel to stay clear of cargo during letdown process.
4. Adjust radios as needed.
5. **Pilot indicates, “One minute out.”**
6. Spotter activates hot mike. From this point on all spotter actions will be verbalized to pilot. “Challenge and Response”
7. **Spotter states to pilot, “Removing seatbelt” and “preparing cargo.”**
8. Rig letdown line through figure 8.
9. Attach the figure 8 to a steel-lite carabiner.
10. Cargo letdown pack must be connected to a hard point.
11. Anchor:
 - a. Overhead Anchor: Attach the steel-lite carabiner and the figure 8 to the outside attach point on the left side overhead anchor.
 - b. Floor anchor: Attach the steel-lite carabiner and figure 8 to the forward attach point on the left side of the floor anchor.
12. Position cargo and attach free end of line to cargo with steel-lite carabiner.
13. Take up slack in line.
14. Inspect all rigging.
15. Spotter finalizes proper position over cargo site. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground.)

B.2.2.3 Cargo Deployment

1. **Spotter states to pilot, “Cargo ready.”**
2. Spotter will communicate with pilot regarding adequate rotor clearance, power assessments, and cargo spot status throughout the cargo operation. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground).
3. **Spotter states to pilot, “Cargo away,”** then eases cargo out the door, over the flight step and skid.
4. Begin lowering cargo with positive control of letdown line; do not allow un-arrested descent of cargo. Keep pilot informed of actions and progress of cargo descent:
 - a. **“Cargo out the door”**
 - b. **“Cargo halfway down”**
 - c. **“Cargo on the ground, etc.”**

EMERGENCY PROCEDURE: Cargo on line

If pilot(s) give a negative response to the spotter during any portion of the cargo descent, both will reassess the situation and take appropriate action. In the event of an emergency, it is important that the pilot and spotter understand EXACTLY what action is required so that no miscommunication occurs.

5. When cargo is on the ground, unhook figure 8 and remove letdown line. Hold slack in line to prevent billowing and unhook letdown line bag from hard point. Wrap excess letdown line around bag and throw clear of aircraft.
6. Inform pilot if more cargo is to be lowered. Pilot will determine whether to hold hover or orbit area until cargo is ready for subsequent deployment.
7. When cargo deployment is complete, **spotter states to pilot, “Lines are clear, returning to seat, seatbelt on, clear to depart.”**

B.2.3 EXTERNAL CARGO OPERATIONS

B.2.3.1 Rigging and Loading Cargo

1. Loaded cargo container is set up in the front of the helicopter.
2. Attach one end of the cargo strap to the cargo container and the other end to the swivel. Light weight nets (tuna) are attached to the swivel.
3. External cargo must be attached to the belly hook, with hardware that meets flight manual specs.
4. Spotter performs all appropriate hook checks, attaches single hard loop end of breakaway strap to the top end of the swivel hardware, and then connects swivel system and cargo to helicopter cargo hook.
5. Rig letdown line through figure 8 and attach a carabiner to the hard loop on the free end of the line.
6. Anchor
 - a. Overhead Anchor: Attach the steel-lite carabiner and the rigged figure 8 to the outer attachment point on the left side overhead anchor. Once complete, pull the free end of the line and carabiner down to the floor and attach to the Velcro loop on the breakaway strap. Rappeller nearest the cargo rigging must secure the carabiner attached to the breakaway strap during flight.
 - b. Floor anchor: Attach the rigged figure 8 to the forward attach point on the left side of the floor anchor. Attach locking carabiner on rigged letdown line to the Velcro loop on the breakaway strap. Extender strap may be used to move figure 8 away from the floor anchor.
7. Lock off letdown line on figure 8.
8. Cargo letdown pack must be connected to a hard point.
9. Spotter connects tether, plugs into avionics, completes necessary external cargo checks, boards aircraft, and secures seatbelt.
10. **Spotter tells pilot, “OK to depart,”** and informs pilot that there is an external load attached to the cargo hook.

B.2.3.2 Pre-Cargo Deployment-External Cargo

1. Pilot(s) flies a reconnaissance of the area to look for hazards and works with spotter to select an appropriate cargo site and alternate emergency site.
2. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.) prior to commencing the cargo operation.
3. Spotter advises the ground personnel to stay clear of cargo during letdown process.
4. Adjust radios as needed.

5. **Pilot indicates, “One minute out.”**
6. Spotter activates hot mike. From this point on all spotter actions will be verbalized to pilot. “Challenge and Response”.
7. **Spotter states to pilot “removing seatbelt” and “moving into position”.**
8. Spotter attaches hard loop on the breakaway strap and ensures carabiner is locked.
9. Spotter unlocks the figure 8 and ensures the carabiner is clear of the fuselage.
10. Spotter finalizes proper position over cargo site. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground.)

B.2.3.3 Cargo Deployment–External Cargo

1. Spotter will communicate with pilot regarding adequate rotor clearance, power assessments, and cargo spot status throughout the cargo operation. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground).
2. **Spotter states to pilot, “Cargo is connected hard and ready for deployment on your count.”**
3. Pilot gives a three (3) count and releases cargo from belly hook.
4. Begin lowering cargo with positive control of letdown line; do not allow un-arrested descent of cargo. Keep pilot informed of actions and progress of cargo descent:
 - a. **“Cargo away”**
 - b. **“Cargo halfway down”**
 - c. **“Cargo on the ground”**

EMERGENCY PROCEDURE: Cargo on line

If pilot(s) give a negative response to the spotter during any portion of the cargo descent both will reassess the situation and take appropriate action. In the event of an emergency, it is important that the pilot and spotter understand EXACTLY what action is required so that no miscommunication occurs.

5. When cargo is on the ground, unhook figure 8 from carabiner/anchor and remove letdown line. Hold slack in line to prevent billowing and unhook letdown line bag from hard point. Wrap excess letdown line around bag and throw clear of aircraft.
6. When cargo deployment is complete **spotter states to pilot, “Lines are clear, returning to seat, seatbelt on, clear to depart.”**

NOTE: During rappel operations: Once cargo operation is complete, spotter states to pilot, “lines are clear” then proceeds with rappel sequence.



B.3 BELL 407 RAPPEL PROCEDURES

B.3.1 PRE-FLIGHT PROCEDURES

B.3.1.1 Aircraft Configuration

Configure Helicopter to meet specific needs of the particular mission.

1. Remove or secure rear doors.
2. Front doors and litter door may be removed at pilots and spotters discretion.
3. Secure all loose items.

B.3.1.2 Seating Configuration

Specific seating arrangement for each aircraft must be approved in the aircraft flight manual or Supplemental Type Certificate (STC).

B.3.1.3 Loading Cargo

1. Internal cargo operations:
Spotter oversees loading, rigging, and securing of cargo and letdown equipment.
2. External cargo operations:
Cargo container is set up and loaded at front of helicopter on pilot's side. Spotter oversees all appropriate hook checks, spotter attaches single hard loop end of breakaway strap to the top end of the approved swivel hardware (see flight manual), and then connects swivel system and cargo to helicopter cargo hook.

B.3.1.4 Anchor

Rappel Anchor STC #SR01336AT

1. Spotter visually inspects rappel anchor (see chapter 3, Rappel Anchor inspection).

B.3.1.5 Rigging Anchor

1. When utilized, attach cargo letdown line protective cradle to base plate and ensure keeper pin is in place (external cargo operations only).
2. Install both Aeronautical Accessories (AA) carabiners facing outward with barrel down to the overhead anchors.
3. Attach snub strap soft loop to both (AA) carabiners with snub strap snap opening facing inboard.
4. Attach the steel-lite carabiner outboard of snub strap soft loop with gate facing forward and barrel down to both (AA) carabiners.
5. Spotter inspects all rappel rigging specific to the mission.

CRITICAL:

- ◆ The maximum equipped rappeller weight (including rope) for simultaneous two (2) person rappel operations when left front crew seat is vacant is 265 lbs.
- ◆ The maximum equipped rappeller weight (including rope) for simultaneous two (2) person rappel operations when left front crew seat is occupied is 235 lbs.
- ◆ For external cargo operations with simultaneous two person rappelling, the lighter rappeller shall occupy the right side.
- ◆ The combined weight of crew (front) seat occupants shall not exceed 460 lbs. for external cargo operations during simultaneous two (2) person rappel operations.
- ◆ Cargo shall be lowered prior to rappelling activities (external cargo method).
- ◆ Spotter shall remain on left side during right side rappeller stuck-on-rope recovery operations (the recovery starts as soon as the left side rappeller is off the rope).
- ◆ **Single person rappelling from the right side is prohibited.**
- ◆ Single person rappelling from the left side is permitted only after a mission specific weight and balance calculation has been performed.
- ◆ A mission specific weight and balance (W&B) calculation will be performed prior to every simultaneous two (2) person rappel operation. The purpose is to ensure lateral CG will be within limits in the event a single rappeller gets stuck on the right side rope. If the W&B indicates lateral CG could be exceeded in such an event, simultaneous two (2) person rappel operations will be aborted.

B.3.1.6 Boarding Sequence

1. Rappellers complete buddy check, organize into proper rappel order and prepare to board the aircraft.
2. Ropes, with genies rigged, are connected to the steel-lite carabiner. The snub strap is connected between first and second swedges of rope. (protective hose must be at the bottom of rope bag).
3. Rappeller(s) will “hook-up”, adjust length of rope to descent device to ensure proper position on the skid, then “lock-off”.
4. Spotter initiates right side rappeller equipment check.
 - a. Inspect anchor and accessories
 - b. Inspect Rigging
 - c. Inspect Rope and Genie
 - d. Inspect Rappeller
5. If all is correct and ready, a thumbs up is exchanged by spotter and rappeller. Right side rappeller then boards aircraft, buckles seatbelt ensuring that both lap and shoulder belts are routed under the Forgecraft hook.
6. Spotter then moves to left side rappeller and initiates rappeller equipment check.
7. If all is correct and ready, a thumbs up is exchanged by spotter and rappeller. Left side rappeller then boards aircraft, buckles seatbelt ensuring that both lap and shoulder belts are routed under the Forgecraft hook.
8. Spotter completes pre-flight inspections, and external cargo checks (if utilized).
9. Prior to boarding, spotter receives an equipment check from the rappellers.
10. If all is correct and ready, a thumbs up is exchanged by spotter and rappeller.

11. Spotter enters a/c, connects tether and avionics, takes seat, fastens seatbelt, checks rappeller's seatbelt, ropes and cargo. Rappellers check spotter's seatbelt, tether and avionics, then exchange one last thumbs up with the spotter.

B.3.1.7 Preparing for Flight

1. **Spotter states to pilot, "OK to depart,"** and informs pilot if there is an external load attached to the cargo hook.
2. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.)

B.3.2 IN-FLIGHT PROCEDURES

CRITICAL:

- ◆ **A HOGE Power check is accomplished prior to entering rappel hover at an altitude comparable to the site or greater. A positive rate of climb must be established without exceeding aircraft limitations**
- ◆ **Prior to each rappel sequence, all communications, between the spotter and pilot will be in the form of "Challenge and Response" i.e. spotter states, "Sending rappellers." Pilot replies, "Power good."**
- ◆ **Pilot and spotter will assess the situation prior to each rappel sequence, i.e. available power, platform stability, and assessment of rappel site.**

B.3.2.1 Pre-Rappel Sequence

1. Pilot(s) flies a reconnaissance of the area to look for hazards and works with spotter to select an appropriate rappel site and alternate emergency site.
2. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.) prior to commencing the rappel operation. Spotter communicates with flight following authority & pilot regarding number of rappellers to be deployed.
3. Adjust radios as needed.
4. **Pilot indicates, "One minute out."**

B.3.2.2 Rappel Sequence

1. Spotter removes seatbelt and moves into position.
2. Spotter activates hot mike. From this point on all spotter actions will be verbalized to pilots. "Challenge and Response"

NOTE: For internal cargo operations: Once the off-site power check is complete, the spotter may have rappellers remove and secure seatbelts prior to entering the rappel hover.

3. Spotter and pilot will communicate adequate rotor clearance, power assessments, and rappel spot status throughout the rappel sequence. Using pilot's perspective (left, right, forward, back, and up or down relative to altitude above the ground)
4. **Pilot states to spotter, "Hover established – and Power is good".**

NOTE: For external cargo operations: Rappellers remain in seatbelts. Refer to external cargo deployment procedures.

5. **Spotter states to pilot “removing seatbelts,”** then gives signal to rappeller(s).
6. Rappeller(s) remove and secure seatbelts.
7. **Spotter states to pilot, “Dropping ropes,”** then gives signal to rappeller(s).
8. Rappeller(s) drop ropes.
9. **Spotter checks both ropes then states to pilot, “Ropes are down, spot good.”**
10. **Spotter states to pilot, “Rappeller(s) to the skids,”** then gives signal to rappeller(s).
11. Rappeller(s) move to the skid, get set, clear rope, focus on the spotter.
12. Spotter rechecks anchor rigging.

EMERGENCY PROCEDURE:

If at any time prior to the rappellers descent, the pilot (or spotter) indicates a problem, they shall reassess the situation and take appropriate action.

This may include the spotter delay moving the rappellers out of their seatbelts or aborting the mission. If ropes are out and rappellers are out of their seats, spotter may signal rappellers back into the aircraft and cut ropes.

When spotter signals rappellers to re-enter aircraft the following procedures will occur; rappeller(s) return to seat and secure seatbelt. Spotter removes genies and disconnects ropes or cuts the rope(s) as necessary, closes doors (when applicable), returns to seat, secures seat belt. Spotter states to pilot “clear to fly.”

13. **Spotter states to pilot, “Sending rappellers,”** then gives signal to rappeller(s).
14. Rappeller(s) unlock, rotate over skid, and descend to the ground.
15. **Spotter states to pilot “Rappeller away, half way, on the ground.”**
16. After reaching the ground, rappeller(s) disconnect from rope(s) and move to a safe area.

EMERGENCY PROCEDURE: Rappeller on the rope

If pilot(s) give a negative response to the spotter during any portion of the rappel descent, both will reassess the situation and take appropriate action.

In the event of an emergency, it is important that the pilot and spotter understand EXACTLY what action is required so that no miscommunication occurs.

17. Once the rappellers move to a safe area, spotter disconnects snub strap from rope(s), disconnects the rope from the anchor, confirms genie(s) are on the ground by directing pilot to lower aircraft if necessary, and throws rope(s).
18. **Spotter states to pilot, “Unhooking ropes, ropes away, returning to seat, seatbelt on, clear to fly.”** Spotter and pilot may proceed with internal cargo prior to leaving hover. See Internal Cargo Deployment Procedures below.
19. Radio returned to normal operational mode and flight following authority is informed that rappel operation has been completed. The helicopter shall remain in the area until rappellers have positive communication with dispatch, division, etc.

B.4 Bell 407 CARGO DEPLOYMENT PROCEDURES

CRITICAL:

- ◆ Due to lateral C.G. limitations, cargo must be deployed from the left side of the helicopter.
- ◆ A swivel will be required with all external loads. The swivel attachment ring inside diameter must meet helicopter hook specifications.
- ◆ A HOGE Power check must be accomplished prior to entering cargo hover at an altitude comparable to the site or greater. A positive rate of climb must be established without exceeding aircraft limitations
- ◆ Prior to each cargo sequence, all communications, between the spotter and pilot will be in the form of “Challenge and Response” i.e. spotter states, “Sending Cargo.” Pilot replies, “Power good.”
- ◆ Pilot and spotter will assess the situation prior to each cargo sequence, i.e. available power, platform stability, and assessment of cargo site.

B.4.1 PRE-FLIGHT PROCEDURES

1. Prior to departure, the pilot(s) and involved personnel shall receive a briefing on mission objectives, communications, known hazards, and emergency procedures.
2. Load calculations and manifests complete and posted.
3. Spotter completes necessary pre-flight inspections.
4. Spotter puts on harness, ensures safety knife is attached to harness. A secondary knife may be accessible in the aircraft or on the spotter.
5. Prior to flight, the spotter must receive a spotter equipment check. When ground personnel are unavailable, the spotter may have the pilot perform this check. Positive communication between the spotter and pilot must occur to ensure spotter has attached their tether to an approved hard point.

B.4.1.1 Aircraft Configuration

1. Remove or secure rear doors.
2. Front doors and litter door may be removed at pilots and spotters discretion.
3. Secure all loose items.

B.4.1.2 Anchor

Rappel Anchor STC #SR01336AT

1. Spotter visually inspects rappel anchor (see chapter 3, Rappel Anchor inspection).

B.4.2 INTERNAL CARGO PROCEDURES

B.4.2.1 Rigging and Loading cargo

1. Spotter oversees loading and securing of cargo and letdown equipment.
2. Spotter boards aircraft, connects tether, and fastens seatbelt.
3. Spotter states to pilot, “OK to depart.”

B.4.2.2 Pre-Cargo Deployment

1. Pilot(s) flies a reconnaissance of the area to look for hazards and works with spotter to select an appropriate rappel site and alternate emergency site.
2. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.) prior to commencing the cargo sequence.
3. Spotter advises the ground personnel to stay clear of cargo during letdown process.
4. Adjust radios as needed.
5. **Pilot indicates, “One minute out.”**
6. Spotter activates hot mike. From this point on all spotter actions will be verbalized to pilot. “Challenge and Response”
7. **Spotter states to pilot, “Removing seatbelt” and “Preparing cargo.”**
8. Cargo letdown pack must be connected to a hard point.
9. Rig letdown line through figure eight.
10. Attach the figure 8 to the steel-lite carabiner.
11. Attach the steel-lite carabiner to both AA carabiners.
12. Position cargo and attach free end of line to cargo with steel-lit carabiner.
13. Take up slack in line.
14. Inspect all rigging.
15. Spotter finalizes proper position over cargo site. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground)

B.4.2.3 Cargo Deployment

1. **Spotter states to pilot, “Cargo ready.”**
2. Spotter will communicate with Pilot regarding adequate rotor clearance, power assessments, and cargo spot status throughout the cargo operation. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground).
3. **Spotter states to pilot, “Cargo away,”** then eases cargo out the door, over the flight step and skid.
4. Begin lowering cargo with positive control of letdown line; do not allow un-arrested descent of cargo. Keep Pilot informed of actions and progress of cargo descent:
 - a. **“Cargo out the door”**
 - b. **“Cargo halfway down”**
 - c. **“Cargo on the ground”**

EMERGENCY PROCEDURE: Cargo on Line

If pilot(s) give a negative response to the spotter during any portion of the cargo descent, both will reassess the situation and take appropriate action.

In the event of an emergency, it is important that the Pilot and Spotter understand EXACTLY what action is required so that no miscommunication occurs.

5. When cargo is on the ground, unhook figure 8 and remove letdown line. Hold slack in line to prevent billowing and unhook letdown line bag from hard point. Wrap excess letdown line around bag and throw clear of aircraft.

6. Inform Pilot if more cargo is to be lowered. Pilot will determine whether to hold hover, or orbit area until cargo is ready for subsequent deployment.
7. When cargo deployment is complete, **spotter states to pilot, “Lines are clear, returning to seat, seatbelt on, clear to depart.”**

B.4.3 EXTERNAL CARGO OPERATIONS

B.4.3.1 Rigging and Loading Cargo

1. Loaded cargo container is set up in the front of the helicopter.
2. Attach one end of the cargo strap to the cargo container and the other end to the swivel. Lightweight nets (tuna) are attached to the swivel.
3. External cargo must be attached to the belly hook, with hardware that meets flight manual specs.
4. Spotter performs all appropriate hook checks, attaches single hard loop end of breakaway strap to the top end of the swivel hardware, and then connects swivel system and cargo to helicopter cargo hook.
5. Rig letdown line through figure 8 and attach a carabiner to the hard loop on the free end of the line.
6. Attach the figure 8 to the steel-lite carabiner.
7. Attach the steel-lite carabiner to both AA carabiners (barrel up and gate facing aft).
8. The letdown line, with locking carabiner attached, is pulled down thru figure eight so that carabiner is level with the rear seat cushion.
9. Attach locking carabiner on rigged letdown line to the Velcro loop on the breakaway strap.
10. Place letdown line in cradle (when utilized) and ensure carabiner is clear of fuselage. If rappeller(s) are on board, left side rappeller may hold letdown line secure in cradle (when utilized) during deployment.
11. Lock off letdown line on figure 8.
12. Cargo letdown pack must be connected to an approved hard point.
13. Spotter performs final cargo letdown system inspection, boards aircraft, connects tether, and fastens seatbelt.
14. **Spotter states to pilot, “Tether connected, seatbelt secure.”** Spotter informs pilot there is an external load attached to the cargo hook.
15. **Spotter states to pilot, “Ready to depart.”**

B.4.3.2 Pre-Cargo Deployment – External Cargo

1. Pilot(s) flies a reconnaissance of the area to look for hazards and works with spotter to select an appropriate cargo site and alternate emergency site.
2. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.) prior to commencing the cargo operation.
3. Spotter advises the ground personnel to stay clear of cargo during letdown process.
4. Adjust radios as needed.
5. **Pilot indicates, “One minute out.”**
6. Spotter activates hot mike. From this point on all spotter actions will be verbalized to pilot. “Challenge and Response”.
7. **Spotter states to pilot, “Removing seatbelt” and “Moving into position.”**

8. Spotter attaches hard loop on the breakaway strap and ensures carabiner is locked.
9. Spotter unlocks the figure 8 and ensures the carabiner is clear of the fuselage.

B.4.3.3 Cargo Deployment – External Cargo

1. Spotter will communicate with Pilot regarding adequate rotor clearance, power assessments, and cargo spot status throughout the cargo operation. Using pilot's perspective (left, right, forward, back, and up or down relative to altitude above the ground.)
2. **Spotter states to pilot, "Cargo is connected hard and ready for deployment on your count."**
3. Pilot gives a three (3) count and releases cargo from belly hook.
4. Begin lowering cargo with positive control of letdown line; do not allow un-arrested descent of cargo. Keep Pilot informed of actions and progress of cargo descent:
 - a. **"Cargo away"**
 - b. **"Cargo halfway down"**
 - c. **"Cargo on the ground"**

EMERGENCY PROCEDURE: Cargo on line

If pilot(s) give a negative response to the spotter during any portion of the cargo descent, both will reassess the situation and take appropriate action.

In the event of an emergency, it is important that the Pilot and Spotter understand EXACTLY what action is required so that no miscommunication occurs.

5. When cargo is on the ground, unhook figure 8, remove letdown line, and secure figure 8. Hold slack in line to prevent billowing and unhook letdown line bag from hard point. Wrap excess letdown line around bag and throw clear of aircraft.
6. When cargo deployment is complete, **spotter states to pilot, "Lines are clear, returning to seat, seatbelt on, clear to depart."**

NOTE: During rappel operations: Once cargo operation is complete, spotter states to pilot, "Lines are clear," then proceeds with rappel sequence.



B.5 BELL 206L-4 RAPPEL PROCEDURES

B.5.1 PRE-FLIGHT PROCEDURES

B.5.1.1 Aircraft Configuration

Configure Helicopter to meet specific needs of the particular mission.

1. Remove or secure rear doors.
2. Front doors and litter door may be removed at pilots and spotters discretion.
3. Secure all loose items

B.5.1.2 Seating Configuration

Specific seating arrangement for each aircraft must be approved in the aircraft flight manual or Supplemental Type Certificate (STC).

B.5.1.3 Loading Cargo

1. Internal cargo operations:
Spotter oversees loading, rigging, and securing of cargo and letdown equipment.
2. External cargo operations:
Cargo container is set up and loaded at front of helicopter on pilot's side. Spotter oversees all appropriate hook checks, spotter attaches single hard loop end of breakaway strap to the top end of the approved swivel hardware (see flight manual), and then connects swivel system and cargo to helicopter cargo hook.

B.5.1.4 Anchor

Internal Rappel Anchor – STC #SH 4547NM

Overhead Cargo Bracket – STC #SH2293SO

1. Spotter visually inspects rappel anchor and overhead cargo bracket (see chapter 3, Rappel Anchor inspection).

B.5.1.5 Rigging Anchor

Install steel-lite carabiners, gates facing forward, to the floor anchor clevises.

B.5.1.6 Boarding Sequence

1. Rappellers complete buddy check, organize into proper rappel order and prepare to board the aircraft.

2. Ropes, with genies rigged, are connected to the steel-lite carabiner. The snub strap is connected between first and second swedges of rope. (Protective hose must be over the door sill).
3. Rappeller(s) will “hook-up”, adjust length of rope to descent device to ensure proper position on the skid, then “lock-off”.
4. Spotter initiates right side rappeller equipment check.
 - a. Inspect rappel anchor, overhead cargo bracket and accessories
 - b. Inspect Rigging
 - c. Inspect Rope and Genie
 - d. Inspect Rappeller
5. If all is correct and ready, a thumbs up is exchanged by spotter and rappeller. Right side rappeller then boards aircraft, buckles seatbelt ensuring that both lap and shoulder belts are routed under the Forgecraft hook.
6. Spotter then moves to left side rappeller and initiates rappeller equipment check.
7. If all is correct and ready, a thumbs up is exchanged by spotter and rappeller. Left side rappeller then boards aircraft, buckles seatbelt ensuring that both lap and shoulder belts are routed under the Forgecraft hook.
8. Spotter completes preflight inspections, and external cargo checks (if utilized).
9. Prior to boarding, spotter receives an equipment check from the rappellers.
10. If all is correct and ready, a thumbs up is exchanged by spotter and rappeller.
11. Spotter enters a/c, connects tether and avionics, takes seat, and fastens seatbelt, checks rappellers’ seatbelt, ropes and cargo. Rappellers check spotter’s seatbelt, tether and avionics, then exchange one last thumbs up with the spotter.

B.5.1.7 Preparing for Flight

1. **Spotter states to pilot, “OK to depart,”** and informs pilot if there is an external load attached to the cargo hook.
2. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.)

B.5.2 IN-FLIGHT PROCEDURES

CRITICAL:

- ◆ **A HOGE Power check is accomplished prior to entering rappel hover at an altitude comparable to the site or greater. A positive rate of climb must be established without exceeding aircraft limitations**
- ◆ **Prior to each rappel sequence, all communications, between the spotter and pilot will be in the form of “Challenge and Response” i.e. spotter states, “Sending rappellers” Pilot replies, “Power good.”**
- ◆ **Pilot and spotter will assess the situation prior to each rappel sequence, i.e. available power, platform stability, and assessment of rappel site.**

B.5.2.1 Pre-Rappel Sequence

1. Pilot(s) flies a reconnaissance of the area to look for hazards and works with spotter to select an appropriate rappel site and alternate emergency site.

2. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.) prior to commencing the rappel operation. Spotter communicates with flight following authority & pilot regarding number of rappellers to be deployed.
3. Adjust radios as needed.
4. **Pilot indicates, “One minute out.”**

B.5.2.2 Rappel Sequence

1. Spotter removes seatbelt and moves into position.
2. Spotter activates hot mike. From this point on all spotter actions will be verbalized to pilots. “Challenge and Response”

NOTE: For internal cargo operations: Once the off-site power check is complete, the spotter may have rappellers remove and secure seatbelts prior to entering the rappel hover.

3. Spotter and pilot will communicate adequate rotor clearance, power assessments, and rappel spot status throughout the rappel sequence. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground)
4. **Pilot states to spotter, “Hover established – and Power is good.”**

NOTE: For external cargo operations: Rappellers remain in seatbelts. Refer to external cargo deployment procedures.

5. **Spotter states to pilot, “Removing seatbelts,”** then gives signal to rappeller(s).
6. Rappeller(s) remove and secure seatbelts.
7. **Spotter states to pilot, “Dropping ropes,”** then gives signal to rappeller(s).
8. Rappeller(s) drop ropes (inside of the skids).
9. **Spotter checks both ropes then states to pilot, “Ropes are down, spot good.”**
10. **Spotter states to pilot, “Rappellers to the skids,”** then gives signal to rappeller(s).
11. Rappeller(s) move to the skid, get set, clear rope, focus on the spotter.
12. Spotter rechecks anchor rigging.

EMERGENCY PROCEDURE:

If at any time prior to the rappellers descent, the pilot (or spotter) indicates a problem, they shall reassess the situation and take appropriate action. This may include the spotter delay moving the rappellers out of their seatbelts or aborting the mission. If ropes are out and rappellers are out of their seats, spotter may signal rappellers back into the aircraft and cut ropes.

When spotter signals rappellers to re-enter aircraft the following procedures will occur; rappeller(s) return to seat and secure seatbelt. Spotter removes genies and disconnects ropes or cuts the rope(s) as necessary, closes doors (when applicable), returns to seat, secures seat belt. Spotter states to pilot, “Clear to fly.”

13. **Spotter states to pilot, “Sending Rappeller(s)”** then gives signal to rappeller(s).
14. Rappeller(s) transition inside skid, unlock, and descend to the ground.

15. **Spotter states to pilot, “Rappeller away, half way, on the ground.”**
16. After reaching the ground, rappeller(s) disconnect from rope(s) and move to a safe area.

EMERGENCY PROCEDURE: Rappeller on the Rope

If pilot(s) give a negative response to the spotter during any portion of the rappel descent, both will reassess the situation and take appropriate action.

In the event of an emergency, it is important that the Pilot and Spotter understand EXACTLY what action is required so that no miscommunication occurs.

17. Once the rappellers move to a safe area, spotter disconnects snub strap from rope(s), disconnects the rope from the anchor, confirms genie(s) are on the ground by directing pilot to lower aircraft if necessary, and throws rope(s).
18. **Spotter states to pilot, “Unhooking ropes, ropes away, returning to seat, seatbelt on, clear to fly.”** Spotter and pilot may proceed with internal cargo prior to leaving hover. See Internal Cargo Deployment Procedures below.
19. Radio returned to normal operational mode and flight following authority is informed that rappel operation has been completed. The helicopter shall remain in the area until rappellers have positive communication with dispatch, division, etc.

B.6 Bell 206L-4 CARGO DEPLOYMENT PROCEDURES

CRITICAL:

- ◆ Due to lateral C.G. limitations, cargo must be deployed from the left side of the helicopter.
- ◆ A swivel will be required with all external loads. The swivel attachment ring inside diameter must meet helicopter hook specifications.
- ◆ A HOGE Power check must be accomplished prior to entering cargo hover at an altitude comparable to the site or greater. A positive rate of climb must be established without exceeding aircraft limitations
- ◆ Prior to each cargo sequence, all communications, between the spotter and pilot will be in the form of “Challenge and Response” i.e. spotter states, “Sending Cargo.” Pilot replies, “Power good.”
- ◆ Pilot and spotter will assess the situation prior to each cargo sequence, i.e. available power, platform stability, and assessment of cargo site.

B.6.1 PRE-FLIGHT DUTIES

1. Prior to departure, all pilot(s) and involved personnel shall receive a briefing on mission objectives, communications, known hazards, and emergency procedures.
2. Load calculations and manifests complete and posted.
3. Spotter completes necessary pre-flight inspections.
4. Spotter puts on harness, ensures safety knife is attached to harness. A secondary knife may be accessible in the aircraft or on the spotter.
5. Prior to flight, the spotter must receive a spotter equipment check. When ground personnel are unavailable, the spotter may have the pilot perform this check. Positive communication between the spotter and pilot must occur to ensure Spotter has attached their tether to an approved hard point.

B.6.1.1 Aircraft Configuration

1. Remove or secure rear doors.
2. Front doors and litter door may be removed at pilots and spotters discretion.
3. Secure all loose items.

B.6.1.2 Anchor

Overhead Cargo Bracket – STC #SH2293SO

1. Spotter visually inspects overhead cargo bracket (see chapter 3, Rappel Anchor inspection).

B.6.2 INTERNAL CARGO PROCEDURES

B.6.2.1 Rigging and Loading Cargo

1. Spotter oversees loading and securing of cargo and letdown equipment.
2. Spotter boards aircraft, connects tether, and fastens seatbelt.
3. **Spotter states to pilot, “OK to depart.”**

B.6.2.2 Pre-Cargo Deployment

1. Pilot(s) flies a reconnaissance of the area to look for hazards and works with spotter to select an appropriate rappel site and alternate emergency site.
2. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.) prior to commencing the cargo sequence.
3. Spotter advises the ground personnel to stay clear of cargo during letdown process.
4. Adjust radios as needed.
5. **Pilot indicates, “One minute out.”**
6. Spotter activates hot mike. From this point on all spotter actions will be verbalized to pilot. “Challenge and Response”
7. **Spotter states to pilot, “Removing seatbelt” and “Preparing cargo.”**
8. Cargo letdown pack must be connected to a hard point.
9. Rig letdown line through figure 8.
10. Attach the figure 8 to the steel-lite carabiner.
11. Attach the steel-lite carabiner to both AA carabiners on the overhead cargo bracket.
12. Position cargo and attach free end of line to cargo with steel-lite carabiner.
13. Take up slack in line.
14. Inspect all rigging.
15. Spotter finalizes proper position over cargo site. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground.)

B.6.2.3 Cargo Deployment

1. **Spotter states to pilot, “Cargo ready.”**
2. Spotter will communicate with Pilot regarding adequate rotor clearance, power assessments, and rappel spot status throughout the rappel sequence. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground.)
3. **Spotter states to pilot, “Cargo away,”** then eases cargo out the door, over the flight step and skid.
4. Begin lowering cargo with positive control of letdown line; do not allow un-arrested descent of cargo. Keep pilot informed of actions and progress of cargo descent:
 - a. **“Cargo out the door”**
 - b. **“Cargo halfway down”**
 - c. **“Cargo on the ground”**

EMERGENCY PROCEDURE: Cargo on line

If pilot(s) give a negative response to the spotter during any portion of the cargo descent, both will reassess the situation and take appropriate action.

In the event of an emergency, it is important that the Pilot and Spotter understand EXACTLY what action is required so that no miscommunication occurs.

5. When cargo is on the ground, unhook figure 8 and remove letdown line. Hold slack in line to prevent billowing and unhook letdown line bag from hard point. Wrap excess letdown line around bag and throw clear of aircraft.
6. Inform pilot if more cargo is to be lowered. Pilot will determine whether to hold hover, or orbit area until cargo is ready for subsequent deployment.
7. When cargo deployment is complete, **spotter states to pilot, “Lines are clear, returning to seat, seatbelt on, clear to depart.”**

B.6.3 EXTERNAL CARGO OPERATIONS**B.6.3.1 Rigging and Loading Cargo**

1. Loaded cargo container is set up in the front of the helicopter.
2. Attach one end of the cargo strap to the cargo container and the other end to the swivel. Lightweight nets (tuna) are attached to the swivel.
3. External cargo must be attached to the belly hook, with hardware that meets flight manual specs.
4. Spotter performs all appropriate hook checks, attaches single hard loop end of breakaway strap to the top end of the swivel hardware, and then connects swivel system and cargo to helicopter cargo hook.
5. Rig letdown line through figure 8 and attach a carabiner to the hard loop on the free end of the line.
6. Attach the figure 8 to the steel-lite carabiner.
7. Attach the steel-lite carabiner to both AA carabiners on the overhead cargo bracket (barrel up and gate facing aft).
8. The letdown line, with locking carabiner attached, is pulled down thru figure eight so that carabiner is level with the rear seat cushion.
9. Attach locking carabiner on rigged letdown line to the velcro loop on the breakaway strap.
10. If rappeller(s) are on board, left side rappeller may hold letdown line secure.
11. Lock off letdown line on figure 8.
12. Cargo letdown pack must be connected to an approved hard point.
13. Spotter performs final cargo letdown system inspection, boards aircraft, connects tether, and fastens seatbelt.
14. **Spotter states to pilot, “Tether connected, seatbelt secure.”** Spotter informs pilot there is an external load attached to the cargo hook.
15. **Spotter states to pilot, “Ready to depart.”**

B.6.3.2 Pre-Cargo Deployment – External cargo

1. Pilot(s) flies a reconnaissance of the area to look for hazards and works with spotter to select an appropriate cargo site and alternate emergency site.
2. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.) prior to commencing the cargo operation.
3. Spotter advises the ground personnel to stay clear of cargo during letdown process.
4. Adjust radios as needed.
5. **Pilot indicates, “One minute out.”**
6. Spotter activates hot mike. From this point on all spotter actions will be verbalized to pilot. “Challenge and Response”
7. **Spotter states to pilot, “Removing seatbelt” and “moving into position.”**
8. Spotter attaches hard loop on the breakaway strap and ensures carabiner is locked.
9. Spotter unlocks the figure 8 and ensures the carabiner is clear of the fuselage.

B.6.3.3 Cargo Deployment – External Cargo

1. Spotter will communicate with pilot regarding adequate rotor clearance, power assessments, and cargo spot status throughout the cargo operation. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground.)
2. **Spotter states to pilot, “Cargo is connected hard and ready for deployment on your count.”**
3. Pilot gives a three (3) count and releases cargo from belly hook.
4. Begin lowering cargo with positive control of letdown line; do not allow un-arrested descent of cargo. Keep pilot informed of actions and progress of cargo descent:
 - a. **“Cargo away”**
 - b. **“Cargo halfway down”**
 - c. **“Cargo on the ground”**

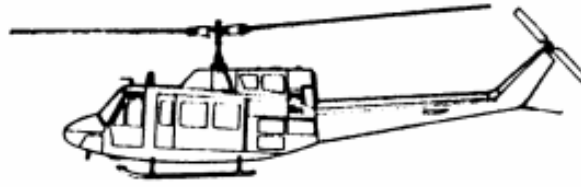
EMERGENCY PROCEDURE: Cargo on Line

If pilot(s) give a negative response to the spotter during any portion of the cargo descent, both will reassess the situation and take appropriate action.

In the event of an emergency, it is important that the Pilot and Spotter understand EXACTLY what action is required so that no miscommunication occurs.

5. When cargo is on the ground, unhook figure 8, remove letdown line, and secure figure 8. Hold slack in line to prevent billowing and unhook letdown line bag from hard point. Wrap excess letdown line around bag and throw clear of aircraft.
6. When cargo deployment is complete, **spotter states to pilot, “Lines are clear, returning to seat, seatbelt on, clear to depart.”**

NOTE: During rappel operations: Once cargo operation is complete, spotter states to pilot, “lines are clear,” then proceeds with rappel sequence.



B.7 BELL 205/212/214B/412 RAPPEL PROCEDURES

B.7.1 PRE-FLIGHT PROCEDURES

B.7.1.1 Aircraft Configuration

Configure Helicopter to meet specific needs of the particular mission.

B.7.1.2 Seating Configuration

Specific seating arrangement for each aircraft must be approved in the aircraft flight manual or Supplemental Type Certificate (STC).

B.7.1.3 Loading Cargo

Spotter oversees loading and securing of cargo.

B.7.1.4 Anchor

Avspec Rappel Kit - STC #SH261WE

1. Spotter visually inspects rappel anchor (see chapter 3, Rappel Anchor inspection.)

B.7.1.5 Rigging Anchor

1. Install steel-lite carabiners to overhead anchor.
2. Snub strap may be routed between anchor and ceiling.
3. Install steel-lite carabiners, at forward slot of each door anchor. Install second steel-lite carabiner, to upper carabiner.
4. Thread each rope through the lowest carabiner on the door bracket, then attach each rope to the carabiner on the overhead anchor. Then, attach safety snub strap to rope(s) between 1st and 2nd swedge. For single side operation free end of snub strap will be secured to the carabiner on the off side of the rappel anchor. Ropes may be pre-rigged with genies prior to installation in aircraft.
5. Spotter inspects all rappel rigging specific to the mission.

B.7.1.6 Boarding Sequence

1. Rappellers complete buddy check, organize into proper rappel order and prepare to board the aircraft.
2. Spotter performs equipment check on each rappeller. If all is correct, a thumbs up signal is exchanged.

3. Once complete, each Rappeller boards aircraft and takes pre-assigned seat. The first rappeller boarding on each side shall perform a full visual inspection of the rigged genie(s), rope attachment, and safety snub strap. Attaches their gunner strap with release on the right, then buckles seatbelt. Gunner strap and seatbelt must be below the Forgecraft hook. Gunner straps tethers will be adjusted to prohibit movement outside the aircraft.
4. Last rappeller to be checked completes equipment check on spotter prior to spotter boarding a/c. If all is correct, a thumbs up signal is exchanged, then rappeller boards aircraft.
5. Spotter completes necessary preflight inspections.
6. Spotter enters aircraft.
7. Spotter connects tether, plugs into radio system, checks rappellers seatbelts and gunner straps, ensures doors are shut and secure, takes seat, fastens seatbelt, displays tether and seatbelt and exchanges a thumbs up if all is ok.

B.7.1.7 Preparing for Flight

1. **Spotter states to pilot, “OK to depart.”**
2. Once in flight, contact appropriate flight following authority (ATGS, HLCO, dispatch).

B.7.2 IN-FLIGHT PROCEDURES

CRITICAL:

- ◆ **A HOGE Power check is accomplished prior to entering rappel hover at an altitude comparable to the site or greater. A positive rate of climb must be established without exceeding aircraft limitations**
- ◆ **Prior to each rappel sequence, all communications, between the spotter and pilot will be in the form of “Challenge and Response” i.e. Spotter states, “Sending rappellers.” Pilot replies, “Power good”.**
- ◆ **Pilot and spotter will assess the situation prior to each rappel sequence, i.e. available power, platform stability, and assessment of rappel site.**

B.7.2.1 Pre-Rappel Sequence

1. **Spotter states to pilot, “Removing seatbelt and moving into position”.**
2. When below 40 knots, **spotter states to pilot, “opening aircraft door(s).”** If double door operation, spotter may elect to open both doors or have designated rappeller open other door upon receiving hand signal.
3. Pilot(s) flies a reconnaissance of the area to look for hazards and works with spotter to select an appropriate rappel site and alternate emergency site.
4. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.) prior to commencing the rappel operation. Spotter communicates with flight following authority & pilot regarding number of rappellers to be deployed.
5. Adjust radios as needed.

B.7.2.2 Rappel Sequence

1. Spotter activates hot mike. From this point on all spotter actions will be verbalized to pilot. “Challenge and Response”
2. Spotter / pilot communicate adequate rotor clearance, power assessments, and rappel spot status throughout the rappel sequence. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground.)

NOTE: If internal cargo is to be delivered at this time, all rappellers shall remain in seat belts until cargo delivery is completed.

3. **Spotter states to pilot, “Dropping ropes.”**
4. Spotter drops rope outside skid and ensures it is free of knots and rope bag is on the ground. In double door operation spotter may drop second rope or give designated rappeller on the opposite side of the aircraft signal to drop rope.
5. **Spotter states to pilot, “Rappellers to the door,”** then gives signal to each rappeller.
6. Rappeller(s) remove seat belt and move to the door. Rappeller(s) grasp genie, orient, hook up and lock off, places right hand on gunner release and presents hook up and lock off to the spotter.
7. Spotter confirms the rappeller’s hook-up and lock off.
8. **Spotter states to pilot, “Rappellers to the skids,”** then gives signal to each rappeller.
9. Rappeller(s) remove gunner strap, moves to the skid, gets set, clears rope, returns focus on the spotter.

EMERGENCY PROCEDURE:

If at any time prior to the rappellers descent, the pilot (or spotter) indicates a problem, they shall reassess the situation and take appropriate action.

This may include the spotter delay moving the rappellers out of their seatbelts or aborting the mission. If ropes are out and rappellers are out of their seats, spotter may signal rappellers back into the aircraft.

When spotter signals rappellers to re-enter aircraft the following procedures will occur; rappeller(s) return to seat and secure seatbelt. Spotter removes genies and disconnects ropes or cuts the rope(s) as necessary, closes doors (when applicable), returns to seat, secures seat belt. Spotter states to pilot, “Clear to fly.”

10. **Spotter states to pilot, “Sending rappellers,”** then gives signal to rappellers.
11. Rappeller(s) unlock, transition over skid, and descend to the ground.
12. **Spotter states to pilot, “Rappeller away, half way, on the ground.”**

EMERGENCY PROCEDURE: Rappeller on the rope

If pilot(s) give a negative response to the spotter during any portion of the rappel descent, both will reassess the situation and take appropriate action.

In the event of an emergency, it is important that the pilot and spotter understand EXACTLY what action is required so that no miscommunication occurs.

13. After reaching the ground, rappeller(s) disconnect from rope(s) and move to a safe area. Rappeller(s) must advise spotter if there is a bad rope or rappel site.
14. Once rappellers move to a safe area, spotter may advise pilot to lower aircraft to place genies on the ground, then repeats rappel process from step 5 as necessary.
15. Once complete, **spotter states to pilot, “Unhooking ropes, ropes away, returning to seat, seatbelt on, clear to depart.”**
16. The spotter may initiate the internal cargo procedure at this time. See cargo procedures below.
17. Radio returned to normal operational mode and flight following authority is informed that rappel operation has been completed. The helicopter shall remain in the area until rappellers have positive communication with dispatch, division, etc.

B.7.2.3 RIGGING ROPES IN FLIGHT

After the completion of the first mission and prior to landing, there may be a need to deploy additional rappellers at a different location. In this case ropes and genies must be rigged in flight. Remaining rappellers must perform visual check once the spotter completes the rigging process. Once complete, a thumbs up is exchanged.

B.8 BELL 205/212/214B/412 CARGO DEPLOYMENT PROCEDURES

CRITICAL:

- ◆ A HOGE Power check is accomplished prior to entering cargo hover at an altitude comparable to the site or greater. A positive rate of climb must be established without exceeding aircraft limitations
- ◆ Prior to each cargo sequence, all communications, between the spotter and pilot will be in the form of “Challenge and Response” i.e. spotter states, “Sending Cargo.” Pilot replies, “Power good”
- ◆ Pilot and spotter will assess the situation prior to each cargo sequence, i.e. available power, platform stability, and assessment of cargo site.
- ◆ If rappellers are to be deployed before cargo, the rigged figure 8, installed on the overhead door bracket, must not interfere with the rappel process.

B.8.1 PRE-FLIGHT DUTIES

1. Prior to departure, all pilot(s) and involved personnel shall receive a briefing on mission objectives, communications, known hazards, and emergency procedures.
2. Spotter puts on harness, ensures safety knife is attached to harness. A secondary knife may be accessible in the aircraft or on the spotter.
3. Load calculations and manifests complete and posted.
4. Spotter completes necessary pre-flight inspections.
5. Prior to flight, the spotter must receive a spotter equipment check. When ground personnel are unavailable, the spotter may have the pilot perform this check. Positive communication between the spotter and pilot must occur to ensure Spotter has attached their tether to an approved hard point.

B.8.1.1 Aircraft Configuration

1. Spotter will configure Helicopter to meet the needs of the specific mission.
2. Rig cargo with carabiner(s) and secure in helicopter. Check cargo delivery equipment to ensure proper number of letdown lines, extra carabiners, and figure 8 are available and secured in accessible location.
3. If not performed in flight, rig Figure 8 with cargo letdown line and attach figure 8 using one (1) carabiner in rear slot of door bracket. Attach end of letdown line to cargo with steel locking carabiner. Lock carabiner.
4. Spotter closes doors, attaches tether, takes seat, secures seat belt, attaches avionics, and prepares for flight.

B.8.1.2 Anchor

Avspec Rappel Kit - STC #SH261WE

1. Spotter visually inspects anchor. (See Chapter 3, Rappel Anchor Inspection)

B.8.1.3 Pre-Cargo Sequence

1. **Spotter states to pilot, “Removing seatbelt and moving to the door.”**
2. **Pilot indicates, “air speed below 40 kts.”**
3. **Spotter states to pilot, “Door coming open.”**
4. Recon area for hazards and confirm deployment site with pilot.
5. Identify and check alternate site.
6. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.) prior to commencing the cargo deployment operation.
7. Spotter activates hot mike and completes necessary cargo rigging. “Challenge and Response”
8. If not performed on the ground, rig Figure 8 with cargo letdown line and attach figure 8 using one (1) carabiner in rear slot of door bracket. Attach end of letdown line to cargo with steel locking carabiner. Lock carabiner.
9. Cargo letdown pack must be connected to a hard point.
10. Spotter removes restraining straps from cargo, secures straps, and positions cargo in doorway. Spotter relays to pilot when rigging is complete.
11. Inform ground personnel to stay clear of cargo during deployment.
12. Spotter finalizes proper position over cargo site. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground.)

B.8.2 CARGO DEPLOYMENT

1. **Spotter states to pilot, “Cargo ready.”**
2. Spotter will communicate with pilot regarding adequate rotor clearance, power assessments, and cargo spot status throughout the cargo operation. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground).
3. **Spotter states to pilot, “Cargo away,”** then eases cargo out the door, over the flight step and skid.
4. Begin lowering cargo with positive control of letdown line; do not allow un-arrested descent of cargo. Keep pilot informed of actions and progress of cargo descent:
 - a. **“Cargo out the door”**
 - b. **“Cargo halfway down”**
 - c. **“Cargo on the ground”**

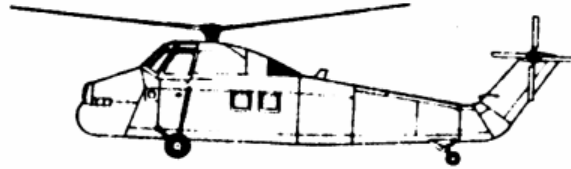
EMERGENCY PROCEDURE: Cargo on Line

If pilot(s) give a negative response to the spotter during any portion of the cargo descent, both will reassess the situation and take appropriate action.

In the event of an emergency, it is important that the Pilot and Spotter understand EXACTLY what action is required so that no miscommunication occurs.

5. When cargo is on the ground, unhook figure 8 from carabiner/Anchor and remove letdown line. Hold slack in line to prevent billowing and unhook letdown line bag from hard point. Wrap excess letdown line around bag and throw clear of aircraft.

6. Inform pilot if more cargo is to be lowered. Pilot will determine whether to hold hover or orbit area until cargo is ready for subsequent deployment.
7. When cargo deployment is complete **spotter states to pilot, “Lines are clear, doors are shut, returning to seat, seatbelt on, clear to depart.”**



B.9 SIKORSKY S-58T RAPPEL PROCEDURES

B.9.1 PRE-FLIGHT PROCEDURES

B.9.1.1 Aircraft Configuration

Configure helicopter to meet specific needs of the particular mission.

B.9.1.2 Seating Configuration

Specific seating arrangement for each aircraft must be approved in the aircraft flight manual or Supplemental Type Certificate (STC).

B.9.1.3 Loading Cargo

Spotter oversees loading and securing of cargo.

B.9.1.4 Anchor

No STC currently. Complete information and specifications regarding this anchor system is on file at MTDC.

1. Spotter visually inspects rappel anchor (see chapter 3, Rappel Anchor inspection)

B.9.1.5 Rigging Anchor

1. Attach carabiner to both forward rings on the rappel anchor. Attach rope to carabiner (make sure the protective hose is at the bottom end of the rope).
2. For snub strap, install steel-lite carabiner to either aft ring, barrel lock down. Attach snub strap soft loop to carabiner.
3. Attach rope to anchor and attach safety snub strap to rope between 1st and 2nd swedge. Rope may be pre-rigged with genies (not to exceed 5) prior to installation in aircraft.
4. Spotter inspects all rappel rigging specific to the mission.

B.9.1.6 Boarding Sequence

1. Rappellers complete buddy check, organize into proper rappel order and prepare to board the aircraft.
2. Spotter performs final equipment/spotter check on each rappeller. If all is correct, a thumbs up signal is exchanged.

3. Once complete, each Rappeller boards aircraft and takes pre-assigned seat. The first rappeller boarding shall perform a full visual inspection of the rigged genie(s), rope attachment, and safety snub strap. Rappeller attaches their gunner strap with release on the right, and then buckles seatbelt. Gunner strap and seatbelt must be below the Forgecraft hook. Gunner straps tethers will be adjusted to prohibit movement outside the aircraft.
4. Last rappeller to be checked completes equipment check on spotter prior to spotter boarding a/c. If ok, a thumbs up is exchanged, then rappeller boards aircraft.
5. Spotter completes necessary preflight inspections.
6. Spotter enters aircraft.
7. Spotter checks and secures door.
8. Spotter checks rappellers seatbelts and gunner straps, connects spotter tether, plugs into radio system, takes seat, fastens seatbelt, displays tether and seatbelt, and exchanges a thumbs up if all is ok.

B.9.1.7 Preparing for Flight

1. **Spotter states to pilot, “OK to depart.”**
2. Once in flight, contact appropriate flight following authority (ATGS, HLCO, Dispatch).

B.9.2 IN-FLIGHT PROCEDURES

CRITICAL:

- ◆ **A HOGE Power check is accomplished prior to entering rappel hover at an altitude comparable to the site or greater. A positive rate of climb must be established without exceeding aircraft limitations.**
- ◆ **Prior to each rappel sequence, all communications, between the spotter and pilot will be in the form of “Challenge and Response” i.e. spotter states, “Sending rappellers.” Pilot replies, “Power good.”**
- ◆ **Pilot and spotter will assess the situation prior to each rappel sequence, i.e. available power, platform stability, and assessment of rappel site.**

B.9.2.1 Pre-Rappel Sequence

1. Pilot(s) flies a reconnaissance of the area to look for hazards and works with spotter to select an appropriate rappel site and alternate emergency site.
2. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.) prior to commencing the rappel sequence. Spotter communicates with flight following authority & pilot regarding number of rappellers to be deployed.
3. Adjust radios as needed.
4. **Pilot indicates, “One minute out.”**

B.9.2.2 Rappel Sequence

NOTE: Proper deployment sequence for the S-58T is from aft to forward.

1. Spotter removes seatbelt and moves into position.
2. Spotter activates hot mike. From this point on all spotter actions will be verbalized to pilot. “Challenge and Response”
3. If not done so on the ground, spotter opens and secures door.
4. Spotter will communicate with pilot regarding adequate rotor clearance, power assessments, and rappel spot status throughout the rappel sequence. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground).

NOTE: If internal cargo is to be delivered at this time, all rappellers shall remain in seat belts until cargo delivery is completed.

5. **Spotter states to pilot, “Dropping rope.”**
6. Spotter drops rope and ensures it is free of knots and rope bag is on the ground.
7. **Spotter states to pilot, “Rappeller to the door,”** then gives signal to rappeller.
8. Rappeller removes seat belt and moves to the door. Rappeller grasps genie, orients, hooks up and locks off, puts right hand on gunner release and presents hook up to the spotter.
9. Spotter confirms the rappeller’s hook-up and lock off.
10. **Spotter states to pilot, “Rappeller to the step,”** then gives signal to each rappeller.
11. Rappeller removes gunner strap, moves to the step, gets set, clears rope, focus on the spotter.

EMERGENCY PROCEDURE:

If at any time prior to the rappeller’s descent, the pilot (or spotter) indicates a problem, they shall reassess the situation and take appropriate action. This may include the spotter delay moving the rappeller out of their seatbelt or aborting the mission. If rope is out and rappeller is out of their seat, spotter may signal rappeller back into the aircraft.

When spotter signals rappeller to re-enter aircraft the following procedures will occur; rappeller(s) return to seat and secure seatbelt. Spotter removes genies and disconnects ropes or cuts the rope(s) as necessary, closes doors (when applicable), returns to seat, secures seat belt. Spotter states to pilot, “Clear to fly.”

12. **Spotter states to pilot, “Sending rappeller,”** then gives signal to rappeller.
13. Rappeller unlocks, transitions over step, and descends to the ground.
14. **Spotter states to pilot, “Rappeller away, half way, on the ground.”**

EMERGENCY PROCEDURE: Rappeller on the Rope

If pilot(s) give a negative response to the spotter during any portion of the rappel sequence, both will reassess the situation and take appropriate action. In the event of an emergency, it is important that the Pilot and Spotter understand EXACTLY what action is required so that no miscommunication occurs.

15. After reaching the ground, rappeller disconnects from rope and moves to a safe area. Rappeller(s) must advise spotter if there is a bad rope or rappel site.
16. Once rappellers move to a safe area, Spotter may advise pilot to lower aircraft to place genies on the ground, then repeats rappel process from step 5 as necessary.
17. Once complete, **spotter states to pilot, “Unhooking ropes, ropes away, returning to seat, seatbelt on, clear to depart.”**
18. The spotter may initiate the internal cargo procedure at this time. See cargo procedures below.
19. Radio returned to normal operational mode and flight following authority is informed that rappel operation has been completed. The helicopter shall remain in the area until rappellers have positive communication with dispatch, division, etc.

B.9.2.3 RIGGING ROPES IN FLIGHT

After the completion of the first mission and prior to landing, there may be a need to deploy additional rappellers at a different location. In this case ropes and genies must be rigged in flight. Remaining rappellers must perform visual check once the spotter completes the rigging process. Once complete, a thumbs up is exchanged.

B.10 SIKORSKY S-58T CARGO DEPLOYMENT PROCEDURES

CRITICAL:

- ◆ A HOGE Power check must be accomplished prior to entering cargo hover at an altitude comparable to the site or greater. A positive rate of climb must be established without exceeding aircraft limitations.
- ◆ Prior to each cargo sequence, all communications, between the spotter and pilot will be in the form of “Challenge and Response” i.e. spotter states, “Sending Cargo,” Pilot replies, “Power good.”
- ◆ Pilot and spotter will assess the situation prior to each cargo sequence, i.e. available power, platform stability, and assessment of cargo site.
- ◆ If rappellers are to be deployed before cargo, the rigged figure 8, installed on the overhead anchor, must not interfere with the rappel process.

B.10.1 PRE-FLIGHT DUTIES

1. Prior to departure, all pilot(s) and involved personnel shall receive a briefing on mission objectives, communications, known hazards, and emergency procedures.
2. Load calculations and manifests complete and posted.
3. Spotter completes necessary pre-flight inspections.
4. Spotter puts on harness, ensures safety knife is attached to harness. A secondary knife may be accessible in the aircraft or on the spotter.
5. Prior to flight, the spotter must receive a spotter equipment check. When ground personnel are unavailable, the spotter may have the pilot perform this check. Positive communication between the spotter and pilot must occur to ensure spotter has attached their tether to an approved hard point.

B.10.1.1 Aircraft Configuration

1. Spotter will configure helicopter to meet the needs of the specific mission.
2. Rig cargo with carabiner(s) and secure in helicopter. Check cargo delivery equipment to ensure proper number of letdown lines, extra carabiners, and figure 8 are available and secured in accessible location.
3. If not performed in flight, rig Figure 8 with cargo letdown line and attach figure 8 using one carabiner to inside aft anchor ring. Attach end of letdown line to cargo with steel locking carabiner. Lock carabiner. Pull up slack in line.
4. Spotter checks and secures door, attaches tether, secures seatbelt, attaches avionics, and prepares for flight.

B.10.1.2 Anchor

No STC currently. Complete information and specifications regarding this Anchor system is on file at MTDC.

1. Spotter visually inspects rappel anchor (see chapter 3, Rappel Anchor inspection).

B.10.1.3 Pre-Cargo Sequence

1. If not performed on the ground, rig Figure 8 with cargo letdown line and attach figure 8 using one (1) carabiner to inside aft anchor ring. Attach end of letdown line to cargo with steel locking carabiner. Lock carabiner. Pull up slack.
2. Cargo letdown pack must be connected to an approved hard point.
3. Recon area for hazards and confirm deployment site with pilot.
4. Identify and check alternate site.
5. Inform ground personnel to stay clear of cargo during deployment.
6. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.) prior to commencing the deployment sequence.
7. **Pilot indicates, “Air speed below 40 kts.”**
8. Spotter activates hot mike and completes necessary cargo rigging. “Challenge and Response”
9. **Spotter states to pilot, “Removing seatbelt and moving to the door.”**
10. **Spotter states to pilot, “Door coming open.”**
11. Spotter removes restraining straps from cargo, secures straps, and positions cargo in doorway. Spotter relays to pilot when rigging is complete.
12. Spotter finalizes proper position over cargo site. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground.)

B.10.2 CARGO DEPLOYMENT

1. **Spotter states to pilot, “Cargo ready.”**
2. Spotter will communicate with pilot regarding adequate rotor clearance, power assessments, and cargo spot status throughout the cargo operation. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground).
3. **Spotter states to pilot, “Cargo away,”** then eases cargo out the door and over the flight step.
4. Begin lowering cargo with positive control of letdown line; do not allow un-arrested descent of cargo. Keep pilot informed of actions and progress of cargo descent:
 - a. **“Cargo out the door”**
 - b. **“Cargo halfway down”**
 - c. **“Cargo on the ground, etc.”**

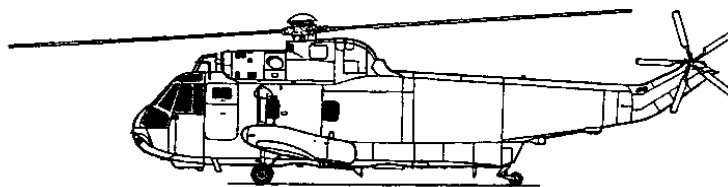
EMERGENCY PROCEDURE: Cargo on line

If pilot(s) give a negative response to the spotter during any portion of the cargo descent, both will reassess the situation and take appropriate action.

In the event of an emergency, it is important that the pilot and spotter understand EXACTLY what action is required so that no miscommunication occurs.

5. When cargo is on the ground, unhook figure 8 from carabiner/anchor and remove letdown line. Hold slack in line to prevent billowing and unhook letdown line bag from hard point. Wrap excess letdown line around bag and throw clear of aircraft.
6. Inform pilot if more cargo is to be lowered. Pilot will determine whether to hold hover or orbit area until cargo is ready for subsequent deployment.

7. When cargo deployment is complete, **spotter states to pilot, “Lines are clear, doors are shut, returning to seat, seatbelt on, clear to depart.”**



B.11 SIKORSKY S-61 RAPPEL PROCEDURES

B.11.1 PRE-FLIGHT PROCEDURES

B.11.1.1 Aircraft Configuration

Configure Helicopter to meet specific needs of the particular mission.

B.11.1.2 Seating Configuration

Specific seating arrangement for each aircraft must be approved in the aircraft flight manual or Supplemental Type Certificate (STC).

B.11.1.3 Loading Cargo

Spotter oversees loading and securing of cargo.

B.11.1.4 Anchor

No STC currently. Complete information and specifications regarding this anchor system is on file at MTDC.

1. Spotter visually inspects rappel anchor (see chapter 3, Rappel Anchor inspection).

Note: Do not attach the rope or letdown rigging to the anchor prior to flight, see pre-rappel sequence in Rappel Procedures below.

B.11.1.5 Rigging Anchor

1. Rappel Mission: Attach one carabiner to the OUTSIDE anchor ring with the gate facing inward, this secures the rope during rappel sequence. Ropes may be pre-rigged with genies (not to exceed 5) prior to installation in aircraft. Secure rope bags in aircraft.
2. Cargo mission: Attach one carabiner to the INSIDE anchor ring with the gate facing inward, this secures the figure 8.

B.11.1.6 Boarding Sequence

1. Rappellers complete buddy check, organize into proper rappel order and prepare to board the aircraft.
2. Spotter performs equipment check on each rappeller. If all is correct, a thumbs up signal is exchanged.

3. Once complete, each rappeller boards aircraft and takes pre-assigned seats. Duties for each seat will be specific to each aircraft and base, i.e. spotter seat, on deck rappeller seat, etc.
4. Last rappeller to be checked completes equipment check on spotter prior to spotter boarding aircraft. If all is correct, a thumbs up signal is exchanged, then rappeller boards aircraft.
5. Spotter completes necessary preflight inspections.
6. Spotter enters aircraft.
7. Close and secure doors.
8. Spotter checks rappellers seatbelts, moves to seat and secures seat belt, attaches avionics, and prepares for flight.

B.11.1.7 Preparing for Flight

1. **Spotter states to pilot, “Ready to depart.”**
2. Once in flight, contact appropriate flight following authority (ATGS, HLCO, dispatch, etc).

B.11.2 IN-FLIGHT PROCEDURES

CRITICAL:

- ◆ **A HOGE Power check is accomplished prior to entering rappel hover at an altitude comparable to the site or greater. A positive rate of climb must be established without exceeding aircraft limitations.**
- ◆ **Prior to each rappel sequence, all communications, between the spotter and pilot will be in the form of “Challenge and Response” i.e. spotter states, “Sending rappellers.” Pilot replies, “Power good”.**
- ◆ **Pilot and spotter will assess the situation prior to each rappel sequence, i.e. available power, platform stability, and assessment of rappel site.**

B.11.2.1 Pre-Rappel Sequence

1. Pilot(s) flies a reconnaissance of the area to look for hazards and works with spotter to select an appropriate rappel site and alternate emergency site.
2. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.) prior to commencing the rappel sequence. Spotter communicates with flight following authority & pilot regarding number of rappellers to be deployed.
3. Adjust radios as needed.
4. **PIC indicates, “One minute from the site, air speed below 40 knots, rappel sequence may begin.”**

B.11.2.2 Rappel Sequence

1. **Spotter states to PIC, “Removing seat belt,”** disconnects avionics, moves from seat, and attaches spotter tether to spotter bracket and reconnects to avionics.
2. Spotter activates hot mike. From this point on all spotter actions will be verbalized to pilots. “Challenge and Response”

3. Spotter displays tether, avionics, and Raptor knife to on deck rappeller, on deck. Rappeller displays their gunner strap to Spotter, if all ok, a thumbs up is exchanged.
4. **Spotter moves to door and states to pilot, “Door coming open”.**
5. Spotter retrieves rope end with pre-attached safety snub strap. Closest rappeller controls rope bag while spotter connects rope to anchor and attaches the other end of the safety snub strap to INSIDE Anchor ring and locks it. Rope end is then attached to OUTSIDE carabiner. Spotter receives rope bag from closest rappeller and proceeds.
6. Spotter will communicate with PIC regarding adequate rotor clearance, power assessments, and rappel site status throughout the rappel sequence using pilot’s perspective (left side, right side, forward, back, and up or down). **The spotter then communicates to both pilots the following: “We are over the spot, how is the power?” SIC responds, “Power is set and good.” PIC responds, “I have the spot, you may proceed”.**

NOTE: If internal cargo is to be delivered at this time, all rappellers shall remain in seat belts until cargo delivery is completed.

7. **Spotter states to pilot, “Dropping rope.”**
8. Spotter drops rope and ensures it is free of knots and rope bag is on the ground.
9. **Spotter states to pilot, “Rappeller to the door,”** then gives signal to rappeller.

NOTE: As each rappeller moves from the on deck seat into the pre-rappel position, the next up Rappeller (order is left side to right and repeat) removes seat belt and IMMEDIATELY re-positions to the on deck seat and attaches seat belt. When the rappeller in the door removes their gunner strap, the on deck rappeller will retrieve and attach it.

10. Once rappeller is at door, spotter points to the anchor showing that rope end is attached to carabiner and safety snub strap is attached and locked between rope swedge and inner ring on the anchor. Rappeller gives thumbs up to spotter if rope attachment is OK. Spotter slides Sky Genie down rope to correct position and hands it to rappeller who hooks up and locks off, rappeller puts right hand on gunner release and presents hook up to the spotter.
11. Spotter visually confirms the rappeller’s hook-up and lock off.
12. **Spotter states to pilot, “Rappeller to the step,”** then gives signal to rappeller.

EMERGENCY PROCEDURE:

If at any time prior to the rappellers descent, the pilot (or spotter) indicates a problem, they shall reassess the situation and take appropriate action.

This may include the spotter delay moving the rappellers out of their seatbelts or aborting the mission. If ropes are out and rappellers are out of their seats, spotter may signal rappellers back into the aircraft.

When spotter signals rappellers to re-enter aircraft the following procedures will occur; rappeller(s) return to seat and secure seatbelt. Spotter removes genies and disconnects ropes or cuts the rope(s) as necessary, closes doors (when applicable), returns to seat, secures seat belt. Spotter states to pilot, "Clear to fly."

13. **Spotter states to pilot, "Sending rappeller,"** then gives signal to rappeller.
14. Rappeller unlocks, transitions over step, and descends to the ground.
15. **Spotter states to pilot, "Rappeller away, half way, on the ground."**
16. After reaching the ground, rappeller disconnects from the rope and moves to a safe area. Rappeller(s) must advise spotter with hand signal if there is a bad rope or rappel site.

EMERGENCY PROCEDURE: Rappeller on the Rope

If pilot(s) give a negative response to the spotter during any portion of the rappel descent, both will reassess the situation and take appropriate action.

In the event of an emergency, it is important that the Pilot and Spotter understand **EXACTLY** what action is required so that no miscommunication occurs.

17. **Spotter states to pilot, "Rappeller clear,"** repeats process from step 8 as necessary. Spotter disconnects snub strap from rope, disconnects rope from anchor, confirms genie(s) are on the ground by directing pilot to lower aircraft if necessary, and throws rope. If second rope is not needed, spotter removes and secures snub strap, closes door, disconnects tether, returns to seat, and fastens seat belt. **Spotter states to pilot, "Rope away and clear, clear to depart the area."** Pilot will confirm with spotter before departure.
18. If second load is needed, leave snub strap in place. Second rope bag is retrieved and the closest rappeller controls rope bag while Spotter connects rope to anchor and attaches the safety snub strap to rope. Spotter receives rope bag from closest rappeller and proceeds from step 6.
19. Radio returned to normal operational mode and flight following authority is informed that rappel sequence has been completed. The helicopter should remain in the area until radio contact is established with rappellers on the ground.

B.12 SIKORSKY S-61 CARGO DEPLOYMENT PROCEDURES

CRITICAL:

- ◆ A HOGE Power check must be accomplished prior to entering cargo hover at an altitude comparable to the site or greater. A positive rate of climb must be established without exceeding aircraft limitations
- ◆ Prior to each cargo sequence, all communications, between the spotter and pilot will be in the form of “Challenge and Response” i.e. spotter states, “Sending rappellers.” Pilot replies, “Power good.”
- ◆ Pilot and spotter will assess the situation prior to each cargo sequence, i.e. available power, platform stability, and assessment of cargo site.

B.12.1 PRE-FLIGHT DUTIES

1. Prior to departure, all pilot(s) and involved personnel shall receive a briefing on mission objectives, communications, known hazards, and emergency procedures.
2. Load calculations and manifests complete and posted.
3. Spotter completes necessary pre-flight inspections.
4. Prior to flight, the spotter must receive a spotter equipment check. When ground personnel are unavailable, the spotter may have the pilot perform this check. Positive communication between the spotter and pilot must occur to ensure spotter has attached their tether to an approved hard point.

B.12.1.1 Anchor

No STC currently. Complete information and specifications regarding this Anchor system is on file at MTDC.

1. Spotter visually inspects rappel anchor (see chapter 3, Rappel Anchor inspection).

B.12.2 INTERNAL CARGO PROCEDURES

B.12.2.1 Rigging and Loading Cargo

1. Spotter oversees loading and securing of cargo and letdown equipment.
2. Spotter attaches one carabiner to the inside anchor ring with the gate facing inward.
3. Cargo letdown bag is attached to left forward most hard point in helicopter with carabiner.
4. Enough letdown line is pulled from bag and rigged to figure 8. Figure 8 is then taped to box/bag (eye facing toward cargo door) to secure it during flight.
5. Spotter attaches end of letdown line with carabiner to bag/box loops and locks barrel.
6. Caution should be used to prevent crossing of letdown lines; this will ensure proper deployment of cargo.
7. Inspect all rigging and secure as needed.

8. Spotter closes door, takes seat, secures seatbelt, attaches avionics, and prepares for flight.

B.12.2.2 Pre-Cargo Deployment

1. Pilot(s) flies a reconnaissance of the area to look for hazards and works with spotter to select an appropriate rappel site and alternate emergency site.
2. Contact appropriate flight following authority (ATGS, HLCO, dispatch, etc.) prior to commencing the cargo sequence.
3. Spotter advises the ground personnel to stay clear of cargo during letdown process.
4. Adjust radios as needed.
5. **Pilot indicates, “One minute out.”**
6. **Spotter states to pilot, “Removing seatbelt,”** disconnects avionics, moves from seat, attaches spotter tether carabiner to spotter bracket. Spotter displays hook up and emergency knife to the assistant spotter or co pilot. Spotter receives thumb up signal if hook up is correct.
7. Spotter hooks into avionics and activates hot mike. From this point on all spotter actions will be verbalized to pilots. “Challenge and Response”
8. If cargo is to be rigged in flight, refer to the rigging procedures above (steps 3-8)
9. During rappel operations, internal cargo may be delivered at this time. Rappellers shall remain in seat belts until cargo portion is complete.
10. Spotter un-tapes figure 8 and pulls it toward the door and attaches it to the anchor carabiner. Take up excessive slack between the cargo and anchor as you move cargo towards the door.

B.12.2.3 Cargo Deployment

1. **Spotter states to pilot, “Cargo is ready.”** Do not place cargo outside the aircraft without pilot approval.
2. Spotter will communicate with pilot regarding adequate rotor clearance, power assessments, and cargo spot status throughout the cargo operation. Using pilot’s perspective (left, right, forward, back, and up or down relative to altitude above the ground).
3. **Spotter states to pilot, “Cargo away,”** then eases cargo out and over the step.
4. Begin lowering cargo with positive control of letdown line; do not allow un-arrested descent of cargo. Keep pilot informed of actions and progress of cargo descent:
 - a. **“Cargo out the door”**
 - b. **“Cargo halfway down”**
 - c. **“Cargo on the ground”**

EMERGENCY PROCEDURE: Cargo on line

If pilot(s) give a negative response to the spotter during any portion of the cargo descent, both will reassess the situation and take appropriate action.

In the event of an emergency, it is important that the Pilot and Spotter understand EXACTLY what action is required so that no miscommunication occurs.

5. When cargo is on the ground, unhook figure 8 from carabiner/anchor and remove letdown line. Hold slack in line to prevent billowing and unhook letdown line bag from hard point. Wrap excess letdown line around bag and throw clear of aircraft.
6. Inform pilot if more cargo is to be lowered. Pilot will determine whether to hold hover or orbit area until cargo is ready for subsequent deployment.
7. When cargo deployment is complete, **spotter states to pilot, “Lines are clear, doors are shut, returning to seat, clear to depart.”**

C FORMS

The following are forms to be used for rappel program documentation purposes. The forms will allow individual rappel programs to organize and document the histories of equipment and training. They were designed to contain all of the pertinent information that has been described in detail in the Interagency Helicopter Rappel Guide.

C.1 Letdown Line Log

ID#: _____

Date Put Into Service: _____

Date Retired: _____

Number of Prior Uses:

Date	Spotter	Height	End	Inspection Date	Inspector Signature	Remarks/Problems
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C.2 Carabiner Log

ID#: _____

Date Put Into Service: _____

Date Retired: _____

Type of Use (Rappel Anchor or Cargo):

Inspection Date	Inspector Signature	Remarks/Problems
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C.3 Harness Log

ID#: _____

Date Put Into Service: _____

Date Retired: _____

Rappeller Issued To:**Date of Issue:**

Inspection Date	Inspector Signature	Remarks/Problems
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C.4 Rappel Unit Log

ID#: _____

Calendar Year: _____

Previous Rappels – Operational:**Other:****Total:**

Date	Incident	Location	Purpose	A/C#	Spotter	Rappellers	Remarks
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C.5 Descent Device Log

ID#: _____ Date Put Into Service: _____ Date Retired: _____

Number of Prior Uses:

Date	Rappeller (s)	Inspection Date	Inspector Signature	Remarks/Problems
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C.6 Rappel Rope Log

ID#: _____

Date of Manufacture: _____

Date Retired: _____

Prior Rappels – A:**B:****Total:**

Date	Purpose	Height	End	Rappeller(s)	Inspection Date	Inspector Signature	Remarks/Problems
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C.8 Rappel Crewmember Training Record

Name: _____

Refer to training elements in Interagency Helicopter Guide, Ch. 2. Instructor must sign off as Trainee completes each step.

1. Rappel Equipment Use and Inspection

Rappeller can identify, put on, use, properly inspect and maintain rappel equipment (rope, harness, sky genie, nomex®, helmet, gloves and belly bag if used) without error.

Date: ____/____/____

Instructor Signature: _____

Date: ____/____/____

Instructor Signature: _____

Date: ____/____/____

Instructor Signature: _____

2. Ground Training

Rappeller has completed ground training, without procedural error, for the rappel sequence, wearing full gear and correctly identifying hand signals, doing buddy checks, and spotter check.

Date: ____/____/____

Instructor Signature: _____

Date: ____/____/____

Instructor Signature: _____

Date: ____/____/____

Instructor Signature: _____

3. Emergency Procedures

Rappeller understands and can perform, without procedural error, the following emergency situation procedures; lock off, emergency signals (spread eagle, lift out, all clear), emergency tie off and rope cut.

Date: ____/____/____

Instructor Signature: _____

Date: ____/____/____

Instructor Signature: _____

Date: ____/____/____

Instructor Signature: _____

4. Low Tower Training

Rappeller has successfully completed, without procedural error, rappels and emergency procedures from an elevated platform.

Date: ____/____/____ #Rappels: _____ A/C Type: _____ Instructor: _____

____/____/____ _____ Signature: _____

____/____/____ _____

____/____/____ _____

____/____/____ _____

5. High Tower Training

Rappeller has successfully completed, without procedural error, rappels and emergency procedures from an elevated platform, 20 ft. Minimum height.

Date: ____/____/____ #Rappels: _____ A/C Type: _____ Instructor: _____

____/____/____ _____ Signature: _____

____/____/____ _____

____/____/____ _____

____/____/____ _____

Rappel Crewmember Training Record (Continued)

6. Mock-up

Rappeller had completed, without procedural error, actual rappel and emergency simulations in the helicopter with full gear, a partner and spotter, while the helicopter remains on the ground, not running.

Date: <u> </u> / <u> </u> / <u> </u>	#Rappels: <u> </u>	A/C Type: <u> </u>	Instructor: <u> </u>
<u> </u> / <u> </u> / <u> </u>	<u> </u>	<u> </u>	Signature: <u> </u>
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7. Helicopter Rappels

Rappeller has successfully completed, without procedural error, the full rappel sequence from a hovering helicopter at various heights up to 250'.

Date: <u> </u> / <u> </u> / <u> </u>	#Rappels: <u> </u>	A/C Type: <u> </u>	Instructor: <u> </u>
<u> </u> / <u> </u> / <u> </u>	<u> </u>	<u> </u>	Signature: <u> </u>
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<u> </u> / <u> </u> / <u> </u>	<u> </u>	<u> </u>	<u> </u>

Date certified as a Rappeller: / / Aircraft Type:

Spotter/Check Spotter Signature:

=====

Date certified as a Rappeller: / / Aircraft Type:

Spotter/Check Spotter Signature:

=====

Date certified as a Rappeller: / / Aircraft Type:

Spotter/Check Spotter Signature:

=====

Date certified as a Rappeller: / / Aircraft Type:

Spotter/Check Spotter Signature:

C.9 Spotter Trainee Record

Name: _____

Refer to training elements listed in Interagency Helicopter Guide, Ch. 2. Instructor must sign off as trainee completes each step.

1. Rappel Equipment Use and Inspection

Spotter can use, properly inspect and maintain rappel equipment (rope, harness, sky genie, nomex, helmet, gloves and belly bag) and helicopter rappel equipment (rappel anchor, safety strap attach point, letdown equipment and associated hardware) without error.

Date: ____/____/____

Instructor Signature: _____

Date: ____/____/____

Instructor Signature: _____

Date: ____/____/____

Instructor Signature: _____

2. Ground Training

Spotter has completed, without procedural error, ground training rappellers by observing buddy checks, checking rappellers, using hand signals and correcting deficiencies.

Date: ____/____/____

Instructor Signature: _____

Date: ____/____/____

Instructor Signature: _____

Date: ____/____/____

Instructor Signature: _____

3. Emergency Procedures

Spotter has performed signals, procedures and communicated with the pilot during the following emergency situation simulations, without procedural error: rappeller stuck on rope, poor environmental conditions (ropes out), aircraft emergency – expedite (ropes out – rappeller on skid, rappeller on rope), aircraft emergency – immediate (ropes out rappeller on skid, rappeller on rope).

Date: ____/____/____

Instructor Signature: _____

Date: ____/____/____

Instructor Signature: _____

Date: ____/____/____

Instructor Signature: _____

4. Low Tower Training

Spotter has successfully directed, without procedural error, rappels and emergency procedures from an elevated platform.

Date: ____/____/____ #Rappels: _____ A/C Type: _____ Instructor: _____

____/____/____ _____ Signature: _____

____/____/____ _____ _____

____/____/____ _____ _____

____/____/____ _____ _____

5. High Tower Training

Spotter has successfully directed, without procedural error, rappels and emergency procedures from an elevated platform, 20 ft. Minimum height.

Date: ____/____/____ #Rappels: _____ A/C Type: _____ Instructor: _____

____/____/____ _____ Signature: _____

____/____/____ _____ _____

____/____/____ _____ _____

____/____/____ _____ _____

LESSON 1: INTRODUCTION

D Rappeller Training**D.1 Introduction**

Course	Interagency Helicopter Rappeller Training
Lesson	I - Introduction
Objectives	➤ Obtain basic knowledge of Rappel Program Management
Time Frame	1 Hour
Training Aids	1 Interagency Helicopter Rappel Guide for each trainee.

LESSON OUTLINE	KEY POINTS
<p>I. INTRODUCTION</p> <p>A. Definition: Helicopter rappelling is the deployment of certified personnel from a hovering helicopter by means of an approved rope, a descent device, and ancillary equipment. Rappelling is comprised of a smooth, controlled, expeditious descent to the ground or other suitable fixed object.</p> <p>B. History</p> <ol style="list-style-type: none"> 1. Late 1950s - U.S. Military 2. 1964, Bell 47 over Shasta Lake 3. 1966, USDA with Bell 204 on Klamath NF, test program 4. 1970, BLM in Alaska - Accident involving the Sky Slide 5. 1972, B.C. Forests, Canada Utilization for initial attack on fire 6. 1972, USDA at Redmond Air Center began test with Bell 205 7. 1974, Bell 212 was introduced to the program 8. 1982, Single turbine light helicopter introduced to the program by Yosemite NP. <p>II. AUTHORITY</p> <ol style="list-style-type: none"> A. Letter of Authorization B. Operating Authority C. Operating Plan D. Agency-Specific Policy, Fire Missions Only for FS <p>III. PURPOSE AND USE OF INTERAGENCY HELICOPTER RAPPEL GUIDE (IHRG)</p> <ol style="list-style-type: none"> A. Develop program standardization B. Procedures guide C. Reference and source list. 	

LESSON 1: INTRODUCTION

LESSON OUTLINE	KEY POINTS
<p>IV. INTERAGENCY RAPPEL WORKING GROUP</p> <ul style="list-style-type: none"> A. Review rappel operations and practices <ul style="list-style-type: none"> 1. Direction 2. Interagency cooperation 3. Establish operating procedures 4. Training needs 5. Equipment development B. Recommend actions <ul style="list-style-type: none"> 1. Resolve problems 2. Exchange ideas 3. Disseminate information 4. Technical input 5. Training development <p>V. UTILIZATION (AGENCY POLICY)</p> <ul style="list-style-type: none"> A. Search and Rescue <ul style="list-style-type: none"> 1. Hasty team placement 2. Equipment deployment B. Law Enforcement C. Fire <ul style="list-style-type: none"> 1. Initial attack 2. Helispot construction 3. Hot-spot suppression 4. Equipment deployment 5. Rescue <p>VI. QUALIFICATIONS: Refer to IHRG, Chapter 2</p> <p>VII. DOCUMENTATION : Unit log of all rappels.</p> <p>VIII. PROFICIENCY: Refer to IHRG, Chapter 2</p>	<p>Go to IHRG, pull out copies of rappeller, rope, and genie logs and demonstrate proper completion of forms.</p>

D.2 Equipment Orientation, Issue and Fit

Course	Interagency Helicopter Rappeller Training
Lesson	II - Equipment Orientation, Issue, & Fit
Objectives	<ul style="list-style-type: none"> ➤ Demonstrate proper use and care of equipment. ➤ Development of equipment confidence.
Time Frame	3 Hours
Training Aids	1 Interagency Helicopter Rappel Guide for each trainee. All articles of rappel equipment.

LESSON OUTLINE	KEY POINTS
<p>I. RAPPEL EQUIPMENT</p> <p>A. All equipment will be monitored, and life expectancy will be followed in order to maintain an adequate margin of safety. Agency-specific direction will be followed.</p> <p>B. Equipment approval is by letter of request through Bureau or Agency Manager to the Director.</p> <p>C. Local procedures shall be followed.</p> <p>D. If you have any questions as to the condition or safety of equipment, ask a Spotter.</p> <p>II. PERSONNEL PROTECTIVE EQUIPMENT</p> <p>A. Helmet</p> <ol style="list-style-type: none"> 1. Purpose 2. Fit 3. Inspection <p>B. Fire Resistant Clothing</p> <ol style="list-style-type: none"> 1. Purpose 2. Fit 3. Inspection <p>C. Leather Boots</p> <ol style="list-style-type: none"> 1. Purpose 2. Fit 3. Inspection <p>D. Rappel Gloves</p> <ol style="list-style-type: none"> 1. Purpose - use only for rappelling. 2. Fit 3. Inspection 	<p>Demonstrate proper fit and care and use of all rappel equipment.</p>

LESSON OUTLINE	KEY POINTS
<p>E. BD Bag</p> <ol style="list-style-type: none"> 1. Purpose 2. Fit 3. Inspection <p>F. Rappel and Spotter Harness</p> <ol style="list-style-type: none"> 1. Purpose 2. Fit 3. Inspection 4. Care <p>G. Descent Device</p> <ol style="list-style-type: none"> 1. Purpose 2. Fit 3. Inspection 4. Care <p>H. Rope</p> <ol style="list-style-type: none"> 1. Purpose 2. Fit - Must integrate with descent device 3. Inspection 4. Care 5. Avoid: <ol style="list-style-type: none"> a. Stepping on ropes b. Exposing to prolonged sunlight c. Dragging over rough surfaces d. Dragging on ground e. Allowing contact with chemicals f. Overload g. Placing near heat source <p>I. Carabiners</p> <ol style="list-style-type: none"> 1. Purpose 2. Fit 3. Inspection 4. Care <p>J. Knife</p> <ol style="list-style-type: none"> 1. Purpose 2. Fit 3. Inspection 4. Care 	<p>If applicable, demonstrate proper use of BD Bag</p> <p>Refer to IHRG and manufacturer's instruction manual and technical bulletin</p> <p>See IHRG for particular details on rope care. Refer to SDEDC Technical Bulletin on Ropes 5/25/90 and Aviation Tech Tip 06/92</p> <p>Refer to IHRG on Carabiners. Also demonstrate use of snub-strap</p> <p>Refer to IHRG Section on knives</p>

LESSON OUTLINE	KEY POINTS
<p>K. Eye Protection</p> <ol style="list-style-type: none">1. Purpose2. Fit3. Inspection4. Care <p>III. AIRCRAFT EQUIPMENT</p> <p>NOTE: Pilot should assist with this section.</p> <p>A. Rappel Anchor - Aircraft Specific</p> <ol style="list-style-type: none">1. FAA Supplemental-Type Certificate2. FAA 337 Certificates3. Aeronautical Accessories - Overhead anchors mounted above and outside the rear doors on the Bell 206 series of helicopters4. Contractor - Built/Installed/Certified	<p>Agency approved safety glasses or goggles are required</p> <p>Only agency-approved anchors will be used. Rappel anchors are model-specific.</p>

D.3 Ground Training

Course	Interagency Helicopter Rappeller Training
Lesson	III - Ground Training
Objectives	<ul style="list-style-type: none"> ➤ Build rappeller confidence in equipment. ➤ Demonstrate basic relationship between rappel equipment. ➤ Develop individual proficiency in handling the descent device, rope, and lock-off procedures.
Time Frame	1 Hour
Training Aids	Training ropes, suitable open area, personal rappel gear, descent control device.

LESSON OUTLINE	KEY POINTS
<p>I. EQUIPMENT OPERATIONS DEMONSTRATION</p> <ul style="list-style-type: none"> A. Rope will attach to immovable object at waist-level. B. Descent device is attached to rope. C. Instructor will demonstrate hookup. D. Instructor will demonstrate “lock-off” configuration and will explain function and use of “lock-off.” E. Demonstrate spotter checks. F. Lean backwards, testing the “lock-off.” G. “Unlock” and demonstrate braking and controlled descent by walking backwards. H. Instructor will then start over and repeat the process outlined in A-G, then demonstrate a lock-off to a tie-off using hand signals. <p>II. FIELD PRACTICAL</p> <ul style="list-style-type: none"> A. Instructor (and assistants) will now start individual trainee instruction on procedures and techniques just demonstrated. B. Follow the same sequence just demonstrated. 	<p>Assistants should set up ground area with proper equipment, i.e., ropes. Trainee group suited in complete rappel gear, (Nomex, harness, PGB, knife, helmet, gloves, and descent control device) and assembled in suitable open area.</p> <p>The lock-off is a basic and important concept in the descent. The “lock-off” is used to prevent the rope from physically passing through the descent device, therefore making any downward travel impossible. The “lock-off” is used in the “pre-exit” phase of rappelling as well as in the emergency tie-off procedures that will be discussed later. Utilizing the “lock-off”, the rappellers can safely stop and secure them self to the rope at any time during the descent.</p> <p>Stress that all PPE will be worn during training.</p> <p>Remember that we attain 100% proficiency before moving on to the next lesson.</p>

D.4 Elevated Platform

Course	Interagency Helicopter Rappeller Training
Lesson	IV - Ground Training - Elevated Platform
Objectives	<ul style="list-style-type: none"> ➤ Demonstrate controlled descent. ➤ Demonstrate lock-off and tie-off. ➤ Make three consecutive descents without procedural error. ➤ Build confidence in equipment and procedures.
Time Frame	2 Hours
Training Aids	Training ropes, Low Tower Platform, Harnesses, Safety Strap, two instructors/spotters, JHA and Tower Safety Plan.

LESSON OUTLINE	KEY POINTS
<p>I. Instructor will demonstrate hand signals and procedures simulating the exit techniques required.</p> <p>A. Instructor will demonstrate low tower rappel.</p> <ol style="list-style-type: none"> 1. Hookup 2. Equipment check “Thumbs Up.” 3. Move into position. 4. Unlock. 5. Exit platform and begin descent. 6. Demonstrate a mid-rappel lock-off. 7. Demonstrate emergency procedures and signals. 8. Demonstrate proper landing and unhooking technique. <ol style="list-style-type: none"> a. <u>Slow before landing, assessing landing area before final ground contact.</u> b. Take firm ground stance, squat, and pull slack in rope. No knee touching ground. c. Unhook from descent control device. d. Move away from simulator. <p>B. Trainee group will execute low tower rappel.</p> <ol style="list-style-type: none"> 1. See IHRG for minimum numbers of cycles. 2. Instructor and assistants will now start individual trainee instructions on procedures and techniques just demonstrated. 3. At local option, procedures can be duplicated using higher platform. 	<p>Assistants should set up low tower platform with proper equipment; i.e., ropes, carabiners, and safety strap(s).</p> <p>Stress that at least one hand must be kept in a braking position throughout the rappel.</p> <p>Platform spotter and ground safety spotter will be assigned for each rope in use. Remember continual and repetitive training in these procedures is recommended to reach levels of confidence and proficiency. Spotters will emphasize exit procedures, movement when exiting skid, emergency procedures, “buddy checks,” and hand signals.</p> <p>Remember that we will attain 100% proficiency before moving on to next section.</p>

D.5 Emergency Procedures

Course	Interagency Helicopter Rappeller Training
Lesson	V - Ground Training -Emergency Procedures
Objectives	➤ Demonstrate and practice emergency procedures.
Time Frame	2 Hours
Training Aids	

LESSON OUTLINE	KEY POINTS
<p>I. AIRCRAFT</p> <p>A. Pilot's Procedures</p> <ol style="list-style-type: none"> Mechanical problems <ol style="list-style-type: none"> Hydraulic boost failure. Gradual oil pressure loss. Caution light. Power loss. Catastrophic failure. Don't change the pilot's methods. Discuss emergency procedures. Pilots have formed habits which they will fall back on when things start happening, so we should adjust our procedures to fit their reactions. <p>II. RAPPEL CYCLE</p> <p>A. Identify the problem:</p> <ol style="list-style-type: none"> Rope entangled in helicopter Rappeller entangled in helicopter Rappeller hung-up on rope or in vegetation Rappeller oscillation Rope hung-up in vegetation Foreign material on rope Rope knotted or twisted Landing spot unsuitable <p>B. Corrective procedures</p> <ol style="list-style-type: none"> Lock-off <ol style="list-style-type: none"> Stop the descent. Hold rope tight in brake hand. It helps to hold the descent control device steady with other hand. Let brake hand move towards descent device. When 8" away, smoothly draw the rope over the top of the descent control device. 	<p>Remember risks exist and consequences are potentially FATAL! Everyone must understand this concept.</p> <p>HINT: The trick to locking-off is to use a dynamic move rather than stopping and trying to hold your weight while moving rope.</p>

LESSON 5: EMERGENCY PROCEDURES

LESSON OUTLINE	KEY POINTS
<ul style="list-style-type: none"> f. Wedge it down between descent control device and standing line. g. A second wrap will secure it. <p>2. Signals to spotter “Spread Eagle” - descent no longer possible, awaiting spotter instructions.</p> <ul style="list-style-type: none"> a. Spotter signals to cut rope or rappeller is lowered to the ground. <p>3. Tie-off</p> <ul style="list-style-type: none"> a. Complete lock-off b. Pull or run loose end of rope beneath attach point on rappel harness until 4-6 feet of slack is obtained. c. Use this slack to tie a half hitch around the standing line above the descent control device. <p>C. Rappeller in distress. In the event a rappeller, while performing a rappel, is injured or unable to proceed, the following procedures shall be implemented.</p> <p>1. If the rope becomes lodged in the descent device and descent is impeded:</p> <ul style="list-style-type: none"> a. Immediately institute a double lock-off b. Signal the spotter “SPREAD-EAGLE” c. If “CUT” signal is received, proceed with emergency tie off procedures. d. Pilot and spotter will institute a fly-away to a suitable landing area. <p>2. If rappeller or rope drifts into a tree or other hazard:</p> <ul style="list-style-type: none"> a. Immediate lock-off b. Attempt to disentangle themselves or the rope c. If unable to free entanglement, spotter may elect to lower rappeller to the ground if practical. If this is not possible the cut signal will be given. <p>3. Rappeller entangled on the helicopter:</p> <ul style="list-style-type: none"> a. Correct within 30 seconds or <ul style="list-style-type: none"> 1) Rappeller re-enters helicopter. 2) Cut rope 	<p>Practice cutting unloaded retired ropes.</p> <p>Spotter and Pilot may elect to lower rappeller to the ground while they remain locked off.</p> <p>ALL emergency procedures will be practiced in training where a controlled environment can be maintained. Each trainee will be proficient in each procedure before advancing to helicopter rappels.</p>

D.6 High Tower

Course	Interagency Helicopter Rappeller Training
Lesson	VI - Ground Training - High Tower/Helicopter Simulator
Objectives	<ul style="list-style-type: none"> ➤ Proficiency in exit from simulator. ➤ Demonstrate controlled descent. ➤ Demonstrate lock-off and tie-off. ➤ Make five consecutive rappels without procedural error including 3 demonstrating emergency procedures prior to helicopter mock-ups. ➤ Demonstrate emergency procedures and hand signals. ➤ Reference 2.4.1.3 expectations.
Time Frame	3 Hours
Training Aids	Trailing Rope, High Tower Platform (min. 20' AGL) w/Simulator, Fully Equipped Rappeller/Trainees, Safety Strap, two instructors/spotters, and two ground safety spotters, JHA and Tower Safety Plan.

LESSON OUTLINE	KEY POINTS
<p>I. HIGH TOWER/HELICOPTER SIMULATOR DEMONSTRATION</p> <p>A. Instructor will give an orientation/review on operational function of the high tower. Instructor should respond to any questions the trainees have.</p> <p>B. Instructor will have at least two training assistants conduct a mock-up simulation and demonstration rappel from the high tower. Demonstrate:</p> <ol style="list-style-type: none"> 1. “Buddy check” 2. Rappel seating positions 3. Seat belts 4. Spotter equipment check 5. Simulate in-flight and pre-exit procedures 6. Remove seat belts using appropriate signals 7. Rope deployment 8. Moving to door 9. Position on skids 10. “OK” to descend 11. Unlock 12. Exit from skid 13. Descend <ol style="list-style-type: none"> a. Discuss speed of rappel <ol style="list-style-type: none"> 1. Too fast - adverse effect on equipment, glazing of rope, etc. 2. Too slow - increased hover time. 	<p>Assistants should set up high tower platform with proper equipment, i.e., ropes, carabiners, and safety strap(s). Trainees suited in full rappel gear (Nomex, harness, PGB, knife, helmet, gloves, and descent device).</p> <p>Instructor will demonstrate the “thumbs up” signal delivered by each rappeller that indicates to the spotter that the rappeller has checked harness, carabiner, descent device, rope connection, and seat belt and that everything is operational.</p> <p>Be sure and give continued verbal description and instruction of what is occurring in the demonstration sequence.</p>

LESSON 6: HIGH TOWER

LESSON OUTLINE	KEY POINTS
<ul style="list-style-type: none"> b. Climatic conditions influencing rope speed c. Minimal braking and bouncing d. Maintain proper braking hand position <p>14. Landing</p> <ul style="list-style-type: none"> a. <u>Reduce rate of descent for safety and clearing of landing area before making ground contact.</u> b. Both feet firmly planted before assuming squat position while feeding to gain slack in rope. c. Unhooking procedure as fast smooth motion while standing up from squat. d. Clear rappel site. <p>15. Review emergency procedures</p> <p>16. Dropping rope</p> <p>17. Clearing helicopter for forward flight.</p>	<p>Model-specific directions for existing simulator must be followed.</p> <p>Be sure a ground spotter is in place to act as a rope tender.</p> <p>Remember that we will attain 100% proficiency before moving on to the next lesson.</p>
<p>II. TRAINEE HIGH TOWER/SIMULATOR RAPPELS</p> <ul style="list-style-type: none"> A. Instructor responds to questions concerning rappelling procedures, techniques, operations, and demonstrations that have been covered up to this point. B. Spotter will have trainees demonstrate emergency tie-off procedures at various intervals during the high tower training phase. C. Keep in mind that repetitious drilling is an effective tower training technique that improves and sharpens individual confidence and proficiency. 	
<p>III. FIELD PRACTICE</p> <ul style="list-style-type: none"> A. Instructor (and assistants) will now start individual training instruction on procedures and techniques just demonstrated. B. Follow the same sequence as just demonstrated. 	

D.7 Helicopter Mock-Up

Course	Interagency Helicopter Rappeller Training
Lesson	VII - Helicopter Mock-Up
Objectives	<ul style="list-style-type: none"> ➤ Familiarize the trainee with the rappel equipment and procedures in the helicopter to be used. ➤ Demonstrated ability to go through mock-up procedures without hesitation and/or error.
Time Frame	3 Hours
Training Aids	Rappel-equipped Helicopter, Rappel-qualified Pilot

LESSON OUTLINE	KEY POINTS
<p>I. INTRODUCTION</p> <p>Emphasis during the mock-up training is to learn proper positioning, loading techniques, in-flight responsibility, and proper off-load procedures during rappel sequence.</p> <p>II. CONFIGURE HELICOPTER</p> <p>A. Appropriate to helicopter type, rappel anchor installed and appropriate equipment on board.</p> <ol style="list-style-type: none"> 1. Cargo - have on board only those items essential to the mission. 2. Cabin configuration - set up to rappel as directed by pilot and spotter. 3. Anchor - installed correctly and secure. 4. Rappel ropes - sufficient number to accomplish mission (extra maybe carried for operational missions). 5. Safety snub strap - attached to ropes. 6. Ropes - attached to rappel anchor with carabiners locked. 7. Abrasion protection - in place. 8. Let-down lines - sufficient aboard for mission and include braking device. 9. Seat belts - secured and serviceable. 10. Hard-point connections - are secured. 11. Spotter's tether strap - is secured, attached to hard point, and adjusted to provide for sufficient movement. 12. Maps and mission information - accessible and secure. 13. Hand-held radio - accessible and secure. 14. Communication check - radios are operational and frequencies are correct. 	<p>Pilot must be present in helicopter. This is to acquaint the pilot with the rappel sequence and get the group working as a team. Trainees must be fully suited up and equipped during mock-up training. This is the real thing without being airborne.</p> <p>Explain and demonstrate complete mock-up procedure using these items.</p> <p>Demonstrate pilot/spotter coordination and discussion of selection and approval of rappel site.</p> <p>AIRCRAFT SPECIFIC. See appendix B for this lesson.</p> <p>Remember that we will attain 100% proficiency before moving on to the next lesson.</p>

LESSON 7: HELICOPTER MOCK-UP

LESSON OUTLINE	KEY POINTS
<p>III. BUDDY CHECK</p> <p>A. Rappeller <--> Rappeller “Buddy Check”</p> <ol style="list-style-type: none"> 1. Helmet - chin strap attached; no loose ends; long hair tucked in and approved eye protection. 2. Shirt or flight suit - tucked in; buttoned to top; flight suit (Nomex) completely zipped. 3. Sleeves - (Nomex) down. 4. Gloves - on; secure (sleeves over gloves and fastened). 5. Harness - correctly fitted; loose straps secured; no twists. 6. Buckles - secured and attached correctly. 7. Descent device - properly attached. 8. Forgecraft hook - gate function check. 9. Knife - (w/lanyard) easily accessible; lanyard secured, out of way. 10. Boots - leather, lace, tops covered by Nomex while sitting. <p>B. Spotter <--> Rappeller</p> <ol style="list-style-type: none"> 1. Helmet - aviator’s protective-type, properly fitted; avionics cord long enough to accommodate movement in cabin; chin strap secured; long hair tucked in. 2. Shirt - tucked in; buttoned to top; flight suit (Nomex) completely zipped. 3. Sleeves - (Nomex) down. 4. Gloves - on; secure (sleeves over gloves and fastened). 5. Harness - correctly fitted; loose straps secured; no twists. 6. Buckles - secured and attached correctly. 7. Safety strap - properly attached. 8. Locking Carabiner - (for safety strap) locked. 9. Knife - (w/lanyard) easily accessible; lanyard secured, out of way. 10. Boots - leather, lace, tops covered by Nomex. <p>IV. LOADING</p> <p>A. Helicopter-model specific (see Appendix B).</p> <p>V. SEATING</p> <p>A. Position - Helicopter-type specific.</p> <p>B. Safety belts - fastened; snugly tightened.</p>	

LESSON 7: HELICOPTER MOCK-UP

LESSON OUTLINE	KEY POINTS
<p>C. Cargo placement</p> <ol style="list-style-type: none"> 1. System-specific 2. Cargo deployment sequence <ol style="list-style-type: none"> a. Before rappel b. After rappel <p>VI. SYSTEMS CHECK</p> <p>A. Rappeller --> System. Check conducted by buddy and spotter.</p> <ol style="list-style-type: none"> 1. Rigging <ol style="list-style-type: none"> a. Carabiner on rappel anchor. b. Rope connection. 2. Equipment <ol style="list-style-type: none"> a. Descent control device. b. Forgecraft hook. c. Harness 3. PPE <ol style="list-style-type: none"> a. Shirt b. Sleeves c. Gloves d. Trousers 4. Seat belt - “Thumbs-up” as “OK” signal. <p>B. Spotter <--> Rappeller(s) system - “Check” conducted by rappellers.</p> <ol style="list-style-type: none"> 1. Rigging <ol style="list-style-type: none"> a. Carabiner on hard-point. b. Spotter tether connection. 2. Equipment <ol style="list-style-type: none"> a. Safety tether b. Carabiner. c. Harness. 3. PPE 4. Seat belt - “Thumbs-up” as “OK” signal <p>VII.SIMULATED FLIGHT/APPROACH</p> <p>A. Determine rappel site.</p> <p>B. Rappellers’ pay attention to spotter.</p>	

LESSON 7: HELICOPTER MOCK-UP

LESSON OUTLINE	KEY POINTS
<p>C. Spotter Actions.</p> <ol style="list-style-type: none"> 1. Communications with pilot. 2. Discussion about site. 3. Preparation of rappellers. <p>D. Power check.</p> <ol style="list-style-type: none"> 1. High hover 2. On-site. 3. "OK." 4. "Go Around" <p>E. Short Final</p> <ol style="list-style-type: none"> 1. Pilot declares short final. 2. Spotter initiates rappeller. <ol style="list-style-type: none"> a. Unbuckle b. Prepare to rappel. <p>VIII. ESTABLISH HOVER</p> <p>A. Check power.</p> <p>B. Drop rope(s).</p> <ol style="list-style-type: none"> 1. Check for knots. 2. Assure they reach the ground. <p>C. Rappel sequence.</p> <ol style="list-style-type: none"> 1. Control rappel to minimize jerking motions and sudden stops. 2. Prior to ground contact, check for undiscovered hazards (i.e., logs, loose rocks, etc.). 3. Upon ground contact, squat while feeding to gain slack in rope. 4. Disconnect from rope while standing up from squat. 5. Clear rappel site. 6. Spotter drops rope(s). <p>D. Post-Rappel for Spotter</p> <ol style="list-style-type: none"> 1. Secure loose items in helicopter. 2. Fasten seat belt. 3. "OK" for pilot to initiate forward flight. 4. Establish contact with rappellers (Ground Personnel) 5. Area recon and report to ground personnel. 	

LESSON 7: HELICOPTER MOCK-UP

LESSON OUTLINE	KEY POINTS
<ul style="list-style-type: none">6. Contact dispatch.<ul style="list-style-type: none">a. Establish flight following.b. Notify mission complete.c. Other requests.d. Information on other aircraft in the area. <p>IX. SIMULATE RETURN TO BASE</p> <ul style="list-style-type: none">A. Inspect remaining equipmentB. Set-up helicopter.C. Documentation of mission. <p>X. CRITIQUE</p> <ul style="list-style-type: none">A. Spotter and pilot.B. Rappeller and Spotter. <p>XI. FIELD PRACTICE</p> <ul style="list-style-type: none">A. Instructor (and assistants) will now start individual trainee instruction on procedures and techniques just demonstrated.B. Follow the same sequence as just demonstrated.	

LESSON 8: HELICOPTER RAPPELS

D.8 Helicopter Rappels

Course	Interagency Helicopter Rappeller Training
Lesson	VIII - Helicopter Rappels
Objectives	<ul style="list-style-type: none"> ➤ Trainee will be able to exit hovering helicopter safely and efficiently. ➤ When exposed to different rappel problems or terrain, is able to complete rappel or corrective procedure without hesitation or error.
Time Frame	8 Hours
Training Aids	Rappel Equipped Helicopter, Rappel-Qualified Pilot

LESSON OUTLINE	KEY POINTS
<p>I. GROUP PREPARATION</p> <p>A. Configure helicopter. Appropriate to helicopter type, rappel anchor installed, and equipment being carried.</p> <p>B. Pre-flight inspection.</p> <ol style="list-style-type: none"> 1. Cargo - have on board only those items essential to the mission. 2. Cabin configuration - set up to rappel as directed by pilot. 3. Anchor - installed correctly and secure. 4. Rappel ropes - sufficient number to accomplish mission. 5. Safety snub attached. 6. Ropes - attached to rappel anchor with carabiners locked. 7. Abrasion protection - in place as needed. 8. Let-down lines - sufficient aboard for mission and include brake device. 9. Seat belts - properly secured and serviceable. 10. Hard-point connections - are secured. 11. Spotter's tether - is secured, attached and adjusted to provide for sufficient movement. 12. Maps and mission information - accessible and secure. 13. Hand-held radio - accessible and secure. 14. Communication check - radios are operational and frequencies correct. 15. P.A. and siren - tested if applicable. <p>II. TRAINING RAPPELS</p> <p>A. Loading</p> <ol style="list-style-type: none"> 1. Helicopter-type specific. See Appendix B. 2. Seating <ol style="list-style-type: none"> a. Position - helicopter-type specific. 	<p>Ground observer must be used during all rappels.</p> <p>Each time a group of rappellers loads for a rappel, the checks must be completed.</p> <p>Refer to IHRG Rappeller Quals, Chapter 2.</p>

LESSON OUTLINE	KEY POINTS
<ul style="list-style-type: none"> <ul style="list-style-type: none"> b. Safety belts <ul style="list-style-type: none"> 1) Fastened 2) Snuggly tightened 3. Cargo placement - system specific. B. Systems check <ul style="list-style-type: none"> 1. Rappeller <--> System - “check” conducted by buddy or spotter. “Thumbs-up” as “OK” signal. <ul style="list-style-type: none"> a. Rigging <ul style="list-style-type: none"> 1) Carabiner on rappel anchor. 2) Rope connection. b. Equipment <ul style="list-style-type: none"> 1) Descent control device 2) Forgecraft hook 3) Harness 4) Knife c. PPE <ul style="list-style-type: none"> 1) Collar 2) Sleeves 3) Gloves 4) Legs d. Seat belt 2. Spotter <--> Rappeller(s) system. “Check” conducted by rappellers. “Thumbs-up” as “OK” signal. <ul style="list-style-type: none"> a. Rigging <ul style="list-style-type: none"> 1) Carabiner on hard-point. 2) Spotter tether connection. b. Equipment <ul style="list-style-type: none"> 1) Safety strap 2) Carabiner 3) Harness 4) Knife c. PPE <ul style="list-style-type: none"> 1) Collar 2) Sleeves 3) Gloves 4) Legs d. Seat belt e. Extra rappel/cargo equipment C. Flight/Approach <ul style="list-style-type: none"> 1. Designate alternate rappel site. 2. Rappellers attention to spotter. Remember the spotter gives the commands, so watch what they are doing. 	<p>Rappellers should be exposed in practice sequences of rappel/cargo deployment. Deployment of cargo may be at either the beginning or at the end of the rappel sequence.</p>

LESSON OUTLINE	KEY POINTS
<ul style="list-style-type: none"> 3. Spotter actions. <ul style="list-style-type: none"> a. Communication's with pilot b. Discussion about site c. Preparation of rappellers 4. Power check. <ul style="list-style-type: none"> a. On site b. "OK" c. "GO AROUND" 5. Short final. <ul style="list-style-type: none"> a. Pilot declaration b. Spotter initiates rappeller. <ul style="list-style-type: none"> 1) Unbuckle 2) Prepare to rappel. <p>D. Establish hover.</p> <ul style="list-style-type: none"> 1. Check power. 2. Drop rope(s). <ul style="list-style-type: none"> a. Check for knots b. Assure they reach the ground 3. Rappel sequence. (AIRCRAFT SPECIFIC) <ul style="list-style-type: none"> a. Control rappel to minimize jerking motions and sudden stops. b. Prior to ground contact check for undiscovered hazards (i.e., logs, loose rocks, etc.). <u>Slow before landing, assess landing area before final ground contact.</u> c. Upon ground contact, squat while feeding slack in rope. d. Disconnect from rope while standing from squat. e. Clear rappel site. f. Additional rappellers descent (helicopter and procedure dependent). 4. Spotter drops rope. 5. Post-Rappel. <ul style="list-style-type: none"> a. Rappeller(s) <ul style="list-style-type: none"> Equipment packaging <ul style="list-style-type: none"> 1) Rope inspection 2) Package rope 3) Package rappel gear b. Spotter <ul style="list-style-type: none"> 1) Secure loose items in helicopter. 2) "OK" for pilot to initiate forward flight. 3) Fasten seat belt. 4) Establish contact with rappellers (ground personnel.) 	<p>The ground observer must critique each rappeller as soon as they get their rope and equipment packaged. Cover each point on the checklist.</p>

LESSON 8: HELICOPTER RAPPELS

LESSON OUTLINE	KEY POINTS
<ul style="list-style-type: none">5) Area recon and report to ground personnel.6) Contact flight following entity, notify mission complete.6. Return to staging area.<ul style="list-style-type: none">a. Inspect remaining equipment.b. Set-up helicopter.c. Documentation of mission.7. Critique<ul style="list-style-type: none">a. Rappeller and ground spotter. <p>REMEMBER! - DO IT UNTIL IT'S RIGHT!</p>	

D.9 Cargo Delivery

Course	Interagency Helicopter Rappeller Training
Lesson	IX - Cargo Delivery
Objectives	<ul style="list-style-type: none"> ➤ Trainee will be able to safely and efficiently deploy cargo from a hovering helicopter utilizing Internal method, External method or both. ➤ When exposed to different cargo delivery problems or terrain, is able to complete cargo delivery or corrective procedure without hesitation or error.
Time Frame	
Training Aids	

LESSON OUTLINE	KEY POINTS
<p>I. APPLICATIONS</p> <p>A. Fire</p> <p>B. Projects</p> <p>II. LIMITATIONS</p> <p>A. Size</p> <ol style="list-style-type: none"> 1. Weight <ol style="list-style-type: none"> a. Unit specific b. Internal Maximum 150 pounds c. External Maximum 300 pounds 2. Dimensions - helicopter-specific <p>B. Methods</p> <ol style="list-style-type: none"> 1. Internal Letdown 2. External Letdown (Belly-hook method) <p>III. PACKAGING</p> <p>A. Concept</p> <ol style="list-style-type: none"> 1. Compact as possible 2. As securely as possible 3. No damage upon delivery <p>B. Containers</p> <ol style="list-style-type: none"> 1. Fire box 2. Tuna Net 3. Klamath Bag 4. Metolius Haulbag 5. A-5 Haulbag 	

LESSON OUTLINE	KEY POINTS
<p>IV. EQUIPMENT</p> <ul style="list-style-type: none"> A. Let-down lines B. Braking device C. Carabiners D. Knife E. Line bags F. Equipment container G. Helicopter anchor point <p>V. SEQUENCING</p> <ul style="list-style-type: none"> A. Cargo only B. Pre-rappel C. Post-rappel <p>VI. OPERATING PROCEDURES</p> <ul style="list-style-type: none"> A. Pre-flight briefing B. Pre-flight inspection <ul style="list-style-type: none"> 1. Spotter's equipment 2. Helicopter equipment 3. Deployment equipment C. In-flight duties D. Deployment E. Administrative <p>VII. EMERGENCY PROCEDURES</p> <ul style="list-style-type: none"> A. Problems <ul style="list-style-type: none"> 1. Helicopter <ul style="list-style-type: none"> a. Control b. Precautionary c. Power loss d. Catastrophic failure 2. Deployment <ul style="list-style-type: none"> a. In or immediate to helicopter b. During letdown B. Corrective actions (Cargo only) <ul style="list-style-type: none"> 1. Detach/Cut line or Lock-off 2. Fly-away 	

E SPOTTER TRAINING

E.1 INTRODUCTION

Course	Interagency Helicopter Rappel Spotter Training
Lesson	I – Introduction
Objectives	➤ To provide a standard format for cargo letdown/Rappel spotter training.
Time Frame	
Training Aids	

LESSON OUTLINE	KEY POINTS
<p>I. Introduction</p> <p>The Spotter is the key position in ensuring the safe deployment of rappellers. Decisions made by Spotters can determine the success or failure of the mission. It is therefore essential that a Spotter is well trained, proficient and competent in their role.</p> <p>II Lesson Agenda</p> <p>Lesson I – Fire behavior/weather refresher. Lesson II – Policy and Procedures Lesson III – Documentation and Administration Lesson IV - Hazards, Limitations and Risk Mgmt Lesson V – Communications Lesson VI – Equipment Lesson VII – Cargo Letdown Lesson VIII – Rappel Spotter Simulated mission</p> <p>** The use of Spotter Training Task Books/Sheets, Regional Guides or Record Books in conjunction with this training is recommended but not mandatory. Agency, Regional or Unit policy may differ on the use of these items.</p>	<p>Instructors should utilize personal experience as training aids</p>

LESSON 2: FIRE/WEATHER BEHAVIOR

E.2 FIRE WEATHER/BEHAVIOR

Course	Interagency Helicopter Rappel Spotter Training
Lesson	II – Fire/Weather Behavior
Objectives	➤ Provide trainee with a thorough refresher of fire and weather behavior elements that may affect the overall rappel mission.
Time Frame	8 hours minimum
Training Aids	

LESSON OUTLINE	KEY POINTS
<p>I. CONTENT</p> <p>A. This lesson should be developed by the Trainer utilizing the resources available to them.</p> <p>B. However, at a minimum it should include elements of the following:</p> <ol style="list-style-type: none"> 1. S-290 or equivalent level of fire behavior refresher 2. Critical elements of weather that effect fire/rappel operations 3. Crew supervision and leadership <p>C. Units integrating these items into Annual Fire Refresher Training may forgo this lesson during Spotter training provided documentation is available indicating the Trainee has met the intent of this lesson.</p>	<p>Fire/weather behavior videos, IRPG, etc.,</p>

E.3 POLICY & PROCEDURES

Course	Interagency Helicopter Rappel Spotter Training
Lesson	III – Policy and Procedures
Objectives	
Time Frame	
Training Aids	

LESSON OUTLINE	KEY POINTS
<p>I. POLICY</p> <p>A. Interagency Helicopter-Rappel guide contains requirements for:</p> <ol style="list-style-type: none"> 1. Spotter prerequisites 2. Spotter Training requirements 3. Fitness standards and requirements 4. Proficiency requirements <p>B. Agency specific regulations and policy</p> <p>II. PROCEDURE</p> <ol style="list-style-type: none"> 1. Applicable portions of Unit Fire Mgmt Plan 2. Base Rappel Operations Plan 3. Rappel Accident Prevention Plan 4. IA dispatch procedures 5. Off Forest rappel procedures 6. Large Incident operations 7. Standard IA loads (numbers and equipment) 8. Training and proficiency schedule 9. Booster rappeller plan (if applicable) 10. Misc. documents as applicable 	<p>IHRG</p> <p>Applicable Agency Manuals/ Handbooks</p> <p>Unit Fire Mgmt Plan</p> <p>Unit Aviation Plan</p> <p>Base Operations Plan</p> <p>Rappel Operations Plan</p> <p>Agency Aviation Accident Prevention Plan</p> <p>National and GACC MOB Guides</p>

E.4 DOCUMENTATION

Course	Interagency Helicopter Rappel Spotter Training
Lesson	IV – Documentation/Administration
Objectives	To familiarize the Trainee with the proper logbook and forms documentation
Time Frame	
Training Aids	

LESSON OUTLINE	KEY POINTS
<p>I. LOGS AND RECORD KEEPING</p> <p>A. Spotter Training Records</p> <p>B. Spotter logs</p> <p>C. Carabineer logs</p> <p>D. Letdown line logs</p> <p>E. Unit Rappel Log</p> <p>II. Refer to Chapter 4 of the IHRG.</p> <p>III. Instructor should stress the importance of keeping thorough and up to date equipment, training and operations logs.</p>	<p>IHRG</p> <p>Applicable records and logs</p>

E.5 HAZARDS, LIMITATIONS & RISK MANAGEMENT

Course	Interagency Helicopter Rappel Spotter Training
Lesson	V - Hazards, Limitations and Risk Mgmt
Objectives	<ul style="list-style-type: none"> ➤ To provide Trainee with awareness of potential hazards encountered during rappel operations. ➤ Provide Trainee with risk management evaluation skills.
Time Frame	
Training Aids	

LESSON OUTLINE	KEY POINTS
<p>I. HAZARDS</p> <p>A. Discuss hazards that could have an impact on rappel operations. These include but are not limited to:</p> <ol style="list-style-type: none"> 1. Weather conditions 2. Visibility 3. Terrain 4. Shadows 5. Equipment malfunctions (rappeller/spotter) 6. Equipment malfunctions (aircraft) 7. Fire behavior 8. Review SAFECOMs <p>B. Stress to Trainee that even though the pilot has the ultimate responsibility for mission safety, the spotter must use sound judgment and abort the mission if conditions exist that he/she deems unacceptable or unsafe.</p> <p>II. MISSION LIMITATIONS</p> <p>A. Discuss the effects the following can have on mission success:</p> <ol style="list-style-type: none"> 1. Altitude 2. Temperature 3. Payload 4. CG 5. Fuel load 6. Pilot limitations (fatigue, etc.) <p>B. Crew limitations (fatigue, “Can Do” attitude, etc.)</p>	<p>Helicopter Rappel Risk Management Check list.</p>

LESSON OUTLINE	KEY POINTS
<p>III. RISK MANAGEMENT</p> <p>A. Review the Helicopter Rappel Risk Management Checklist (Attached training aid).</p> <p>B. Stress the importance of following a procedure for sound risk management in all aspects of a mission.</p> <p>C. AAR-Stress the value of utilizing After Action Reviews as part of good risk management.</p>	

E.6 RAPPEL RISK MANAGEMENT FOR FIRE MISSIONS

E.6.1 Section 1: Preflight, in flight, arrival, and size-up

E.6.1.1 Preflight

1. Pre-flight helicopter checks completed by pilot.
2. Load calculation for destination elevation and temperature completed by pilot and reviewed by spotter.
3. Flight hazard map checked by pilot for aerial hazards on flight route and at destination.
4. Weather forecast and fire indices reviewed by pilot, spotter, and rappellers.
 - a. Thunderstorms and strong winds such as those associated with a cold front can create hazardous conditions for landing/rappelling and increase fire behavior.
 - b. Winds blowing perpendicular to ridges or across geographical prominences can increase lee-side turbulence and should dictate extra caution in landing/rappel site selection.
5. Spotter and rappellers should review pocket card for representative fuel type and conditions.
 - a. High or extreme fire behavior indices should indicate extra caution in landing/rappel site selection.
6. Cargo secured and checked by spotter.
 - a. Ropes and Sky Genies rigged and checked by spotter. (If not rappel ready, instead check to insure that rappel gear is on board helicopter and secured)
 - b. Rappeller checks completed by spotter. (If not rappel ready, skip this step)

E.6.1.2 En route to destination:

1. Establish & maintain positive flight following.
2. Pilot, spotter and rappellers practice in-flight CRM.
3. Any observed aircraft or potential problems should immediately be communicated to the pilot by intercom.
4. Ensure maximum crew participation in searching for and calling out any aerial hazard.
5. Pilot and spotter should look for weather and wind signs that could indicate turbulence or downward movement of air at destination.

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- a. A good indicator on fires is the smoke column; is it shifting direction, laying horizontal or blowing downhill? Is it plume dominated?
- b. Are there thunderstorms in the area?
- c. Is there increased turbulence when flying on the lee side of ridges or geographical prominences?

Any of the above conditions may be an indicator of hazardous landing, rappelling, or firefighting conditions.

E.6.1.3 Arrival on scene:

1. Check airspace for other aircraft before approaching fire area.
2. Establish & maintain positive ICS with pilot & IC. Inform dispatch of arrival.
3. Conduct high-level recon prior to transition to low-level recon. Look for wires, cables, telephone/power poles. Smoke and poor lighting conditions can make it harder to see wires. Small gauge wires may be difficult to see at any distance. If first entry into area, assume there are wires until proven otherwise.
4. Fire size-up
 - a. Fire size?
 - b. Position on slope?
 - c. Fire actively spreading?
 - d. Available fuels to allow fire growth?
 - e. Potential for rapid fire growth due to weather, low fuel moisture, slope, or aspect?
 - f. Identify usable natural firebreaks, roads, trails, water sources near fire.
 - g. Mark fire position in GPS and confirm that IA IC has coordinates in their GPS.
 - h. What kind and how many resources will be needed?
 - i. What is their access? (Roads? Helispots? Jump site?)
 - j. How long until resources arrive?
 - k. If remote area maybe building a helispot is best use of Rappellers?
 - l. Do you have the right IC for the job?
5. Identify safety zone(s) and potential escape routes near fire or within burned area. Use guidelines from page 7 of Incident Response Pocket Guide.
 - a. Before a burned area can be designated as potential safety zone:
 - 1) Most light fuels, including brush (if present), must have been consumed.
 - 2) The burned area must have cooled sufficiently to permit human occupation without excessive heat exposure.
 - 3) Smoke conditions in burned area must not exceed normal tolerable levels.

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6. Identify helicopter landing site(s) near fire (if any).
 - a. Pilot and spotter confirm elevation and temperature, to assure payload is within load calculation parameters.
 - b. If uncertain about whether site is in ground effect or out of ground effect, assume site is out of ground until proven otherwise.
7. If needed, identify potential rappel sites near fire.
 - a. Pilot and spotter confirm elevation and temperature, to assure payload is within load calculation OGE parameters.

E.6.2 Section 2: Deployment**E.6.2.1 Risk decision-making priorities**

E.6.2.1.1 Decision Point 1: Off-site landing area near fire, rapid engagement possible without helicopter or firefighters being exposed to unacceptable hazard from fire behavior:

1. Land helicopter and deploy firefighters unless micrometeorological conditions indicate marginal landing conditions at site. Consider that lee side winds/turbulence can negatively affect helicopter performance.
 - a. Off-site landings carry an elevated degree of risk; site should be carefully evaluated prior to landing approach to confirm suitability as safe landing site. Pilot and spotter should mutually agree on suitability of site.
 - b. Consider an HOGE high hover power check prior to landing at an altitude comparable to the site or greater. A positive rate of climb must be established without exceeding aircraft limitations.
 - c. Dispatch should be contacted prior to landing to inform them of upcoming landing and location.
 - d. Flight crew should continue to look for wires and other hazards until helicopter has landed.
 - e. Rotor wash can cause snags to fall; if snags next to proposed landing site could potentially impact landing site, extreme caution should be used or an alternate site selected.
 - f. Main & tail rotors must maintain adequate safety margin from rocks, brush, and trees on approach route, in landing area, and on departure route.
 - g. Landing pad must be free of objects than could impact underside of fuselage.
 - h. Landing pad must be large enough for skids/wheels and not excessively sloped.
 - i. Dusty landing sites can produce brownout conditions, carefully evaluate and approach potentially dusty areas with caution.

E.6.2.1.2 Decision Point 2: No landing site immediately adjacent to fire:

1. If fire has minimal chance of fire spread and is not an immediate threat to firefighters, consider alternate landing sites an increased distance from fire.

- a. Can aircraft remain on scene while firefighters approach incident? If not, consider having the aircraft fly a bearing from the location of firefighters to the fire to insure firefighters know where the fire is.
- b. If near end of day, will firefighters be able to reach the fire before dark? If not, rappel may be preferred option.
- c. Can you shorten hiking time and minimize depletion of firefighter energy reserves by using cargo letdown to deploy cargo near fire?

NOTE: Option to land at site adjacent to fire not available, fire potential indicates need for rappel.

- If helicopter and rappellers are not rappel ready, go to Decision Point 3.
- If rappel ready, skip Decision Point 3 and go directly to Decision Point 4.

E.6.2.1.3 Decision Point 3: Off-site landing and reconfiguring for rappel mission:

1. If distance/terrain/fire behavior makes it unsafe or unfeasible for firefighters to hike from potential landing site(s) to fire, find landing site a safe distance from fire to rig for rappel. Off-site landings carry an elevated degree of risk; site should be carefully evaluated prior to landing approach to confirm suitability as safe landing site.
 - a. Conduct high-level recon prior to transition to low-level recon. Look for wires, cables, and telephone/power poles. Smoke and poor lighting conditions can make it harder to see wires. Small gauge wires may be difficult to see at any distance. If first entry into area, assume there are wires until proven otherwise.
 - b. Do not land helicopter if micrometeorological conditions indicate marginal landing conditions at site. Consider that lee side winds/turbulence can negatively affect helicopter performance.
 - c. Consider an OGE high hover power check prior to landing at an altitude comparable to the site or greater. A positive rate of climb must be established without exceeding aircraft limitations.
 - d. Dispatch should be contacted prior to landing to inform them of upcoming landing and location.
 - e. Flight crew should continue to look for other aircraft, wires and other hazards until helicopter has landed.
 - f. Rotor wash can cause snags to fall; if snags next to proposed landing site could potentially impact landing site, consider other sites.
 - g. Main & tail rotors must have maintain adequate safety margin from rocks, brush, and trees on approach route, in landing area, and on departure route.
 - h. Landing pad must be free of objects that could impact underside of fuselage.
 - i. Landing pad must be large enough for skids/wheels and not excessively sloped.
 - j. Dusty landing sites can produce brownout conditions, carefully evaluate and approach potentially dusty areas with caution.

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2. Once on the ground, rappellers and spotter reconfigure helicopter and cargo for rappel.
 - a. If the pilot and spotter decide to not shut down while configuring for rappel mission, the pilot must remain at the controls.
 - b. The spotter and rappellers must be cognizant of the main/tail rotor while reconfiguring and rigging for the rappel mission. Flight helmets and PPE must be worn at all times if rotors are turning.
 - c. Crewmembers should not rush or cut corners while reconfiguring/rigging because rotors are turning or because they are concerned about the fire increasing in size while they are absent.
 - d. If doors need to be removed, they should be handled with great care.
 - 1) The light weight and large surface area of doors makes them behave like sails. Rotor wash or wind can catch the door and unbalance the person who carries it. Crewmembers who remove or carry a door should always maintain a firm two-handed grip on it and be prepared for the wind to catch it.
 - 2) After removal, the doors should be placed far away from the landing site and to the side of the approach/departure flight path so there is no chance that rotor wash will affect them while taking off or landing.
 - e. Ropes and Sky Genies rigged and checked by spotter.
 - f. Cargo secured and checked by spotter.
 - g. Rappellers and spotters put on harnesses and rappel gear.
 - h. Rappellers complete buddy checks.
 - i. Spotter performs pre-flight walk-around check of helicopter and landing site before completing rappeller checks.
 - j. Rappeller checks completed by spotter. Conduct last review with pilot and rappellers to insure nothing has been overlooked and everything is ready to go.
 - k. If external cargo system is used, spotter should watch external load during takeoff to insure skid clearance.
 - l. Establish & maintain positive ICS with pilot & rappellers. Dispatch should be notified of departure from off-site landing area and arrival back at fire.
3. Upon arrival back at the fire, check for other aircraft in fire area. Spotter, pilot and IC should re-evaluate fire and planned rappel site to determine if fire/micrometeorological conditions have changed significantly during time away from fire. If previous assessment is no longer valid, conduct new fire behavior/rappel risk assessment. If previous assessment is still valid and rappel can be conducted safely, go to Decision Point 4.

E.6.2.1.4 Decision Point 4: Ridge top rappel site available above fire, rapid engagement possible without firefighters being exposed to undue hazard from fire behavior:

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1. Rappelling carries an elevated degree of risk; site should be carefully evaluated prior to final approach to confirm suitability as safe rappel site.
2. Conduct an HOGE high hover power check prior to rappelling at an altitude comparable to the site or greater. A positive rate of climb must be established without exceeding aircraft limitations.
3. Rappel at ridge top unless micrometeorological conditions indicate potential marginal hover conditions at site. In general, it is often easier to maintain a stable hover on a ridgetop than on a hillside or in a drainage.
4. Pilot and spotter select rappel site. An alternate emergency site should also be selected in the event a rappeller has to perform an emergency tie-off.
5. Rotor wash can cause snags to fall; if snags next to proposed rappel site could potentially impact area where ropes or cargo letdown line would be deployed, extreme caution should be used.
6. Dispatch should be contacted prior to rappelling to inform them of upcoming rappel and GPS coordinates if needed. Radio volume should be turned down during the rappel sequence.
7. If there are firefighters already on the ground, establish communications before proceeding. Advise them to remain away from rappel site and to not interfere or attempt to help until rappellers and cargo are on the ground and helicopter departs.
8. Main & tail rotor must maintain adequate safety clearance from terrain or trees.
9. Before ropes and rappellers are deployed, the spotter and pilot should reconfirm that hover is stable and power is still good. Pilot can elect to re-establish forward flight if aircraft performance indicators are marginal.
10. If pilot has difficulty establishing or maintaining a stable hover before ropes are deployed, pilot should inform spotter of need to re-establish forward flight. Pilot & spotter should jointly re-evaluate proposed rappel site and micrometeorological conditions, re-entry into same site should occur only if conditions substantially improve.
11. If pilot has difficulty maintaining a stable hover after ropes are deployed but before rappellers have started to rappel, pilot should tell spotter to abort the rappel. Spotter should give rappellers signal for emergency return to closest unoccupied seats. After rappellers are back in seats, spotter should cut ropes below Sky Genies and inform pilot “ropes have been cut, you are clear to fly away”. Pilot should then re-establish forward flight.

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12. If pilot has difficulty maintaining a stable hover after ropes are deployed and after rappellers have started to rappel, pilot should tell spotter to abort the rappel. Spotter should immediately respond “do we need to cut ropes and fly away?” If pilot responds “yes”, spotter should cut ropes and inform pilot “ropes have been cut, you are clear to fly away”. Pilot should re-establish forward flight. After forward flight has been achieved, pilot and spotter should return to rappel site to determine if rappellers need medical attention. Dispatch should immediately be informed of situation. Alternate sites for possible rescue mission should be evaluated if medical attention is needed.
13. Before cargo is deployed, the spotter and pilot should reconfirm that hover is stable and power is still good. Pilot can elect to re-establish forward flight if aircraft performance indicators are marginal.
14. Cargo should be deployed, then the letdown line and accordion pack should be released and the figure eight de-rigged and stowed.
15. If pilot experiences difficulty maintaining a stable hover during cargo letdown, pilot should inform spotter of need to re-establish forward flight. Spotter should immediately cut letdown line and inform pilot. Spotter should then secure remaining letdown line and accordion pack, return to seat and buckle seat belt.

NOTE: Rappeller/cargo deployment sequence is dependent on cargo system. External cargo must be deployed before rappellers. Internal cargo may be deployed before or after rappellers.

E.6.2.1.5 Decision Point 5: Rappel site available nearby but located above fire, fuel & weather conditions will create unacceptable hazard to firefighters:

1. Rappel beside or below fire unless micrometeorological conditions indicate potential marginal hover conditions at site. Apply rappel risk evaluation/mitigation process from risk Decision Point 4 (except for direction to use ridgetop rappel site).
 - a. Downhill winds may invalidate normal assumptions about the bottom end of a fire being a safer place for firefighters to anchor and work.

E.6.2.1.6 Decision Point 6: No safe landing or rappel site:

1. Do not deploy personnel.
2. Would buckets or retardant hold the fire until ground-based personnel arrive on fire?

E.6.3 Section 3: Post deployment/pre engagement

1. After rappellers complete rappel, the Incident Commander (IC) or Rappeller-In-Charge (RIC) should immediately contact spotter by radio to confirm rappellers are OK.
2. IC/RIC should perform a rapid risk assessment of fire hazard, confirm safety zone(s) and escape routes are viable, and share that information with other rappellers.
3. The spotter should confirm that the IC/RIC has established positive radio communications with dispatch before helicopter departs area. If positive radio communications cannot be established between firefighters on ground and dispatch, firefighters should not engage the fire.
4. Before engaging the fire, IC or RIC should perform a risk assessment using the risk management process from the Incident Pocket Response Guide. Other firefighters should participate in this process; the results should be shared with all present.

E.7 Communications

Course	Interagency Helicopter Rappel Spotter Training
Lesson	VII – Communications
Objectives	Teach the Trainee the proper communications between pilot and spotter. Teach the Trainee the proper hand signals for communications with rappeller. Provide guidelines for proper communications with area dispatch.
Time Frame	
Training Aids	

LESSON OUTLINE	KEY POINTS
<p>I. PRE AND POST MISSION BRIEFINGS</p> <p>Pre and post mission briefings between the pilot, rappellers and spotter are essential. Items to be identified in the briefing include:</p> <ol style="list-style-type: none"> 1. What is the mission 2. Where is the mission 3. Potential hazards 4. Preflight and in flight checks 5. Trigger points for aborting the mission 6. Emergency procedures <p>II. PILOT/SPOTTER COMMUNICATIONS</p> <p>It is essential that the spotter and pilot develop a common ground for communications. All communications must be clear, concise and understood. Some terminology (i.e. “opening doors”) can be dependent on the make and model of aircraft. However, the following general standardized terminology is to be used during normal rappel operations.</p> <p>A. Directional</p> <ol style="list-style-type: none"> 1. “Left” 2. “Right” 3. “Move forward” 4. “Move back” 5. “Up” and “Down” <p>B. Procedural</p> <ol style="list-style-type: none"> 1. “Dropping rope bags” 2. “Ropes on the ground” 3. “Rappellers to the skids” 4. “Sending rappellers” 	<p>Model specific procedures.</p> <p>Hand signals.</p> <p>Unit Communications Plan.</p> <p>Simulated dispatch and operational rappel.</p>

LESSON OUTLINE	KEY POINTS
<ol style="list-style-type: none"> 5. Rappellers position(s) in relationship to the descent, i.e. "Half way down" 6. "Rappellers on the ground" 7. "Rappellers clear" 8. "Dropping rope (left side/right side)" 9. "Ropes are clear" 10. "Clear to depart" <p>III. SPOTTER/RAPPELLER</p> <p>Communications between the spotter and rappeller are non verbal. Hand signal are used in place of words. Therefore the first step in establishing spotter/rappeller communications is to ensure the rappeller's attention stays focused on the spotter. (Instructor demonstrate standard hand signals) Some non verbal communications (i.e. "opening doors") can be dependent on the make and model of aircraft.</p> <p>IV. FLIGHT FOLLOWING COMMUNICATIONS</p> <ol style="list-style-type: none"> A. Review standard flight following procedures B. Review Unit fire size up procedures C. Instruct trainee in pre/post rappel communications with dispatch, Helibase, etc. <ol style="list-style-type: none"> 1. Lat/Long of rappel site 2. Landing to configure (Lat/Long) 3. Over rappel site, turning down radio 4. Rappel complete, returning to 	

E.8 Equipment

Course	Interagency Helicopter Rappel Spotter Training
Lesson	VIII – Equipment
Objectives	➤ Familiarize Trainee with equipment, inspection and care of equipment used by spotter.
Time Frame	
Training Aids	

LESSON OUTLINE	KEY POINTS
<p>I. INSPECTION</p> <p>A. Review equipment requirements and standards in IHRG.</p> <p>B. Instruct Trainee in the proper methods of equipment inspection.</p> <ol style="list-style-type: none"> 1. If the aircraft is available instruct Trainee in the proper methods of anchor and attachment point inspection. (If the aircraft is not available at this portion of the training, this must be covered prior to mock-ups) 2. Stress to the Trainee that even though the rappeller is responsible for inspection and maintenance of their own equipment, that the spotter is ultimately responsible for monitoring the use and care of all rappeller/spotter equipment. All equipment requirements and standards can be found in the IHRG. 	<p>Spotter harness with tether</p> <p>Carabineers, figure 8, letdown line, snub strap</p> <p>Cargo container or nets, swivels</p> <p>Model specific equipment.</p>

E.9 Cargo Letdown

Course	Interagency Helicopter Rappel Spotter Training
Lesson	IX – Cargo Letdown **This lesson can taught as a stand alone or be combined with Lesson X when the individual is being trained for both cargo letdown and Rappel Spotter concurrently
Objectives	<ul style="list-style-type: none"> ➤ Instruct Trainee in the proper procedures of cargo letdown. ➤ Have Trainee demonstrate proficiency in spotter/pilot communications and cargo letdown procedures.
Time Frame	
Training Aids	

LESSON OUTLINE	KEY POINTS
<p>I. GROUND TRAINING</p> <p>Review model specific video and procedures. Familiarize trainee with equipment. Review applicable portions of IHRG.</p> <p>II. LOW TOWER</p> <p>A. Demonstrate cargo letdown procedures, including spotter/pilot communications, to Trainee from the low tower platform.</p> <p>B. Trainee will assemble, rig and deploy cargo from low tower until Instructor deems the competency level needed to move to the high tower is accomplished.</p> <p>III. HIGH TOWER WITH SIMULATOR</p> <p>A. Demonstrate anchor inspection, proper rigging of cargo and cargo deployment, including spotter/pilot communications and emergency procedures.</p> <p>B. Trainee will deploy cargo from high tower, including emergency procedures, until the required minimums for high tower deployment (five consecutive deployments without procedural error) has been accomplished.</p> <p>IV. MOCK-UPS</p> <p>*The pilot(s) must be present during this phase of the training.</p>	<p>Model specific rappel video</p> <p>Cargo bags/nets, letdown lines, carabineers, figure 8, swivels.</p>

LESSON 9: CARGO LETDOWN

LESSON OUTLINE	KEY POINTS
<p>A. Demonstrate anchor inspection, proper rigging of cargo and cargo deployment, including spotter/pilot communications and emergency procedures.</p> <p>B. Trainee will deploy cargo during mock-ups until the required minimum (eight mock-up cycles without procedural error) has been accomplished.</p> <p>V. HELICOPTER DEPLOYMENT</p> <p>A. Under the supervision of a Check Spotter, trainee will inspect equipment, prepare cargo load, rig the aircraft and deploy a minimum of ten cargo letdown cycles, without procedural error, at low medium and high heights. Five of these deployments will be in typical terrain.</p> <p>B. Should at any point during live helicopter deployment the trainee makes repetitive procedural errors, the instructor will return the trainee to the high tower for additional training.</p>	

E.10 Spotter Procedures

Course	Interagency Helicopter Rappel Spotter Training
Lesson	X – Rappel Spotter ** If cargo letdown and Rappel Spotter are being taught concurrently, integrate Lesson IX – Cargo Letdown, with this portion of the training.
Objectives	<ul style="list-style-type: none"> ➤ Instruct Trainee in the proper procedures of Rappel Spotter. ➤ Have Trainee demonstrate proficiency in spotter/pilot communications and Rappel Spotter procedures.
Time Frame	
Training Aids	

LESSON OUTLINE	KEY POINTS
<p>I. GROUND TRAINING</p> <p>Review model specific video. Familiarize trainee with equipment, spotter equipment checks and spotter “buddy check.” Stress that the spotter is responsible to ensure all equipment is in good condition and properly fitted. In addition, cover proper use, limitations, maintenance and record keeping of equipment. Review applicable portions of IHRG for hand signals, emergency and model specific procedures.</p> <p>II. LOW TOWER</p> <p>A. Demonstrate rappel spotter procedures for low tower.</p> <ol style="list-style-type: none"> 1. Tether attached. 2. Rappeller buddy check completed? 3. Rappeller equipment check 4. Hand signals to unbuckle and move rappeller into position 5. Final equipment check 6. Hand signal to send rappellers 7. Emergency signals <p>B. Trainee will demonstrate the above until Instructor deems the competency level needed to move to the high tower is accomplished. It is important that the Trainee verbalize all actions including spotter/pilot communications.</p>	<p>Model specific rappel video</p> <p>Cargo bags/nets, letdown lines, carabineers, figure 8, swivels, snub straps</p>

LESSON OUTLINE	KEY POINTS
<p>III. HIGH TOWER WITH SIMULATOR</p> <p>A. Instructor will demonstrate:</p> <ol style="list-style-type: none"> 1. Anchor inspection 2. Proper rigging of cargo for deployment 3. Proper attachment of carabineers, ropes and snub strap to anchor points 4. Proper sequence for loading rappellers including: <ol style="list-style-type: none"> 1) Attaching equipment 2) Completed buddy checks 3) Spotter check 4) Final checks prior to launch 5. In flight procedures 6. Fire/rappel spot size up and evaluation 7. Proper sequence for deploying cargo and rappellers including <ol style="list-style-type: none"> A. Preliminary power check B. Setting up over rappel site C. Confirming mission is a go D. Contact with Dispatch E. Cargo deployment F. Use of hand signals to remove seat belts G. Use of hand signals to drop rope bags H. Use of hand signals to send rappellers to skids I. Finals checks J. Use of hand signals to send rappellers K. Disconnecting and throwing out ropes. L. Departing rappel site and reestablishing communications <p>IV. EMERGENCY PROCEDURES</p> <p>A. A spotter must be thoroughly familiar with and able accomplish emergency procedures. The instructor will demonstrate, using equipped rappellers, all established emergency procedures. Instructor will stress the importance of dialog between the pilot and spotter during emergency situations. Also that it is imperative for the spotter to retain control and composure during an emergency.</p>	

LESSON OUTLINE	KEY POINTS
<p>B. Trainee will demonstrate rappel procedures on the high tower, including emergency procedures, until the IHRG requirements pertaining to this portion of the training are accomplished. It is important that the Trainee verbalize all actions including spotter/pilot communications during this phase of training.</p> <p>V. MOCK-UPS</p> <p>*The pilot(s) must be present during this phase of the training.</p> <p>A. Instructor will demonstrate anchor inspection, proper rigging of cargo and rappel equipment, loading of rappellers, cargo and rappeller deployment, including spotter/pilot communications and emergency procedures.</p> <p>B. Trainee will simulate deploying cargo and rappellers during mock-ups until the required minimum (eight mock-up cycles without procedural error) has been accomplished.</p> <p>VI. HELICOPTER DEPLOYMENT</p> <p>A. Under the supervision of a Check Spotter, Trainee will inspect equipment, prepare cargo load, rig the aircraft and deploy a minimum of ten rappel cycles, without procedural error, at low medium and high heights. Five of these deployments will be in typical terrain, three shall include cargo.</p> <p>B. Should at any point during live helicopter deployment the Trainee makes repetitive procedural errors, the Instructor will return the Trainee to the high tower for additional training.</p>	

E.11 SIMULATED MISSION

Course	Interagency Helicopter Rappel Spotter Training
Lesson	XI: Simulated Mission (Optional but recommended)
Objectives	➤ Successful demonstration of spotter competency and knowledge
Time Frame	
Training Aids	

LESSON OUTLINE	KEY POINTS
<p>I. Simulation Logistics</p> <p>A. Instructor will pre-select a location for a simulated fire.</p> <p>B. Instructor will coordinate with local dispatch center, FMO and other necessary personnel to facilitate a live training scenario.</p> <p>II. Task to be completed:</p> <p>A. Trainee will ensure that the aircraft and IA personnel are prepared for an IA mission</p> <p>B. Trainee will demonstrate the correct operational procedures to respond to an IA dispatch call</p> <p>C. Trainee will assist pilot with navigation and communications while en route to simulated fire</p> <p>D. Trainee will provide a fire size up and other applicable information to Dispatch</p> <p>E. Trainee will demonstrate the appropriate procedure to prepare for a rappel (i.e. landing to configure, prepare cargo, etc.)</p> <p>F. Trainee will successfully deploy a minimum of one stick of rappellers performing all operational procedures.</p> <p>G. Trainee will ensure deployed rappellers have established communications, re-configure aircraft and return to base.</p> <p>III. Post Mission</p> <p>A. Trainee will complete mission documentation forms and conduct AAR.</p> <p>B. Successful completion of the scenario does not replace a final evaluation by a Check Spotter.</p>	

F RAPPEL PILOT CERTIFICATION

F.1 INTERAGENCY HELICOPTER RAPPEL GUIDE PILOT REQUIREMENTS

1. Meets the appropriate requirements of the contracting document.
2. Qualified and approved by Agency Inspector Pilot for Long Line.
3. Qualified Spotter will brief, demonstrate, train, and familiarize the pilot on rappel operations and equipment.
4. Pilot will attend mock-up training. (Ground simulation of rappel operations utilizing aircraft)
5. Final approval for rappel operations will be based upon:
 - A. Completion of spotter provided briefing and training
 - B. Demonstrated ability to pilot the helicopter during a series of simulated rappels and cargo letdown operations
 - C. Demonstrated ability to coordinate with rappel spotter
 - D. Demonstrated knowledge of rappel emergency procedures during emergency procedures simulation and aircraft emergency procedures effect on rappel operations

F.2 PILOT RAPPEL TRAINING SYLLABUS

1. Briefing and familiarization on rappel anchor and hard point for specific model including inspection procedures
2. Briefing and demonstration of rappel equipment use and inspection to include harness, descent device, rope, accessories, and PPE
3. Seating arrangement for rappellers and spotters
4. Cargo placement, loading, securing, rigging, inspection, and letdown procedures
5. Exit procedures, sequences and emergency procedures (Review rappel guide)
6. Model specific procedures (Review rappel guide)
7. Helicopter mock-up training to include cargo letdown, rappel sequence, rappel emergency procedures simulation and aircraft emergency procedures
8. Expectations for pre-rappel mission briefing
9. Risk Management procedures and analysis process
10. Review rappel site selection criteria including; personnel safety zones, fire behavior analysis, emergency fly away site, aircraft clearance, ability to land rather than rappel
11. Pilot and Spotter authority and responsibility to cancel any mission deemed unsafe or too high risk